Agricultural Outlook Forum 2000

Speech Booklet 4

Friday, February 25

For release 7:00 a.m., February 25

8:00 THE OUTLOOK FOR COTTON AND FIBERS, PART 1: DOMESTIC AND FOREIGN PROSPECTS

USDA Perspective on the Outlook for Cotton

Andrew Levin, Stephen MacDonald, Leslie Meyer, and Carol Skelly, Agricultural Economists, USDA

8:00 THE OUTLOOK FOR GRAINS AND OILSEEDS

Grains and Oilseeds Outlook for 2000

Thomas F. Tice, Agricultural Economist, Farm Service Agency, USDA

8:00 THE OUTLOOK FOR LABOR-INTENSIVE AGRICULTURE

The Transformation of Rural America: New Latino Communities in Agricultural Regions

Victor Garcia, Associate Professor, Department of Anthropology, Indiana University of Pennsylvania

8:00 THE DAIRY OUTLOOK

The Outlook for Dairy

James J. Miller, Agricultural Economist, Economic Research Service, USDA

U.S. Top Dairies: Benchmarks for Success

Mark W. Stephenson, Cornell Program on Dairy Markets and Policy

10:00 NEW MARKETS FOR BIO-BASED ENERGY AND INDUSTRIAL FEED STOCKS

Bio-diesel: Will There Be Enough?

John B. Campbell, Vice President, Ag Processing, Inc.

12:10 THE LIVESTOCK AND POULTRY LUNCHEON

The Outlook for Livestock and Poultry

Shayle D. Shagam, Agricultural Economist, World Agricultural Outlook Board, USDA

2:00 THE POTENTIAL IMPACT OF ELECTRONIC COMMERCE ON AGRICULTURE AND RURAL AMERICA

Electronic Commerce and Rural Economic Development: Helping Rural Businesses Prepare for the 21st Century

William M. Bomash, Information Technology Leader, Communications and Technical Services, University of Minnesota

2:00 NUTRIENT MANAGEMENT POLICIES: BALANCING LIVESTOCK PRODUCTION WITH ENVIRONMENTAL QUALITY

USDA Initiatives

Glenda Humiston, Deputy Under Secretary for Natural Resources and Environment, USDA

USDA PERSPECTIVE ON THE OUTLOOK FOR COTTON

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World and Foreign Cotton Situation for 1999/2000

The world cotton situation for 1999/2000 is characterized by higher production, consumption and trade, and lower ending stocks. While the average world price A-index for the period August 1999-January 2000 fell by more than 11 cents per pound from the preceding marketing year, the monthly average price for January 2000 is nearly 8 percent higher than the previous month, reversing the falling trend of the previous 7 months. World consumption is estimated at 88.5 million bales, up 3.9 percent from last season, and world production is estimated at 86.9 million bales, up 2.8 percent from a year ago. Ending stocks are estimated to fall to 40.3 million bales, reversing the rising trend of the previous 5 years.

Foreign Area, Yield and Production

Three developments characterize world production in 1999/2000: the rebound in the U.S. crop, the decline in China's production, and the surge in yields in Central and Southern Asia. The U.S. rebound from the previous year's drought-reduced crop was quite significant, but the largest year-to-year change in world cotton production in 1999/2000 occurred in China. The current marketing year marks a momentous change in China's cotton policy: as guaranteed government procurement prices came to an end, cotton producers and consumers began to look to the market for price signals; at the same time, authorization of multiple purchasing agents ended the government cooperative's monopoly on procurement from farmers.

Procurement prices had already been falling before this year's reforms, but the transition to the new policy brought further sharp reductions. Cotton producers in China apparently correctly divined the likely price trend, and planted substantially less cotton in 1999/2000 than the year before; area in China fell 700,000 hectares to its lowest level since 1962. As has so often been the case over the last decade, area shrinkage was largely confined to lower yielding regions. Xinjiang, China's highest yielding region, reduced its area little, if at all, and China's national average yield rose from a year earlier to its second highest level ever. China's crop dropped 3.1 million bales compared with a year earlier, slipping below 19 million bales for only the second time during the 1990's.

While the effects of lower prices and shifting weather helped lower production from the year before in Mexico, Argentina, and Australia, the most significant foreign changes outside of China in 1999/2000 were yield and production increases across a number of countries.

Like China, Pakistan's cotton sector saw significant policy innovations during 1999/2000, as the government responded to a production increase of 1.9 million bales from the year before. Yields soared in Pakistan during 1999/2000, reaching a level previously exceeded only during a brief window early in the 1990's, before a set of high-yielding varieties was overwhelmed by leaf-curl virus. More recently, yields during the last few years have also suffered due to a succession of problems including whitefly,

heliothis, and fog. During 1999/2000, yields rose 25 percent from the preceding year's low level; factors supporting yields included more widespread use of new varieties and better application of higher quality inputs. In addition, weather conditions appear to have been particularly felicitous, as evidenced by extraordinary yields in India's Punjab, and across much of Central Asia. With early-season arrivals surpassing year-ago levels by an even larger margin, Pakistan's government felt obliged to revive a program of government cotton purchases.

Uzbekistan and Turkmenistan both reported surprising yield gains during 1999/2000, and together increased their production 950,000 bales from the year before. Yields rose 26 percent in Turkmenistan and 14 percent in Uzbekistan. According to Turkmenistan's government, seed cotton arrivals this year suggest an even larger yield gain, but most observers are awaiting additional confirmation before accepting the possibility that yields there have returned to levels last seen during the early 1990's. Turkmenistan has reportedly privatized some portions of its agriculture, and 1999/2000 marked its third consecutive yield increase. Information from Turkmenistan is not widely available, but the improving trend in cotton yields, and in wheat yields, suggests the agricultural sector's deterioration there has at least halted, if not reversed.

In Uzbekistan, this year's yield gain was less dramatic, but still took many observers by surprise. Like Turkmenistan, Uzbekistan has essentially maintained its cotton area constant for the last 4 years, in contrast to a precipitous decline during the early 1990's. Similarly, yields have generally stabilized in recent years after a prolonged decline. While both countries have made considerably less progress toward privatization than, for example, much of Central Europe, both seem to have completed at least some phase of their cotton sector's adjustment to the post-Soviet era. However, with no obvious technical or policy developments during the year that could have accounted for their yield gains, its seems reasonable to ascribe much of their good fortune to weather.

India's production rose about 300,000 bales from the year before in 1999/2000, despite the extraordinarily late onset of the monsoon in Gujurat, one of the major producing states. Excellent conditions in Punjab and Haryana have resulted in yields estimated to be 50 to 100 percent higher than the year before, more than offsetting Gujurat's downturn, and rounding out South and Central Asia's apparent good fortune with weather and yields in 1999/2000.

Among other producers: production in West Africa's Franc Zone in 1999/2000 was essentially unchanged from the year before as yields failed to rebound from 1998/99's loss, but crops increased by about 100,000 bales each in Sudan, Kazakhstan, Spain, Turkey, Brazil, and Greece, largely due to improved yields.

Foreign Consumption, Trade, and Ending Stocks

Foreign cotton consumption is estimated to increase significantly this season and reach a record 78.3 million bales. This is an increase from the previous year of 4.7 percent, and is the largest year-to-year growth since 1986. Several factors have contributed to the increase in foreign cotton consumption, including continued recovery in the world's economies following the Asian financial crisis. Falling prices, which have reached their lowest levels since 1986, have also boosted demand for cotton fiber. In addition, reforms implemented in China's textile and cotton industry are expected to boost consumption there by 3.5 percent, reversing the previous year's reduction of 4.8 percent.

According to Oxford Economic Forecasting, world economic growth is estimated at 2.5 percent in 1999 and 3.3 percent in 2000. While world economic growth for 1999 is less than the previous 4-year average of 2.8, it is greater than the previous year's GDP of 1.8 percent. Southeast Asia's GDP is estimated to rebound strongly in 1999 to 3.2 percent from the previous year's decline of 6.2 percent, and the rest of Asia is expected to grow by more than 5 percent. Japan is expected to recover from negative growth of 2.5 percent in 1998 to 0.9 and 1.7 percent in 1999 and 2000, respectively.

Contraction in the economies of several South American countries will dampen economic growth in Latin America to -0.6 percent in 1999, although Brazil will post a slightly positive GDP of 0.3 percent. The countries of the former Soviet Union are also expected to contract to -0.6 percent in 1999. In 2000, however, both Latin America and the countries of the former Soviet Union are expected to post positive GDP of 1.4 and 2.7 percent, respectively.

Foreign consumption increases in the major cotton-producing countries of China, India and Pakistan are expected to comprise 55 percent of worldwide growth in consumption, whereas increases in Turkey, Brazil and Southeast Asia, will comprise 35 percent of worldwide consumption growth. Imports are expected to grow commensurate with consumption with the greatest year-to-year increase in Mexico of 600,000 bales or 41 percent. Increased imports in Brazil, Southeast Asia and Turkey, combined with Mexico, will account for worldwide import growth of 1.7 million bales from the previous year.

Increased exports by the United States and China currently dominate the world trade picture. China's transformation, beginning in April 1998, from net importer to net exporter is perhaps the single most significant factor underlying the decline in world prices through the end of calendar 1999. This change came about as a result of a government decision to stop supporting internal cotton prices above world market-clearing levels, a practice which had resulted in an accumulation of 42 percent of the world's cotton stocks by 1998/99. With the new floating procurement prices in place for the 1999 crop, and partial government subsidies available to help dispose of higher-priced 1998 crop, USDA currently estimates China's cotton exports at 1.2 million bales this season. The combination of lower Chinese production, higher consumption and exports, and limited imports, is expected to reduce China's stocks by nearly 4 million bales or 23 percent from the previous year.

The change in China's net trade position and resulting drawdown in stocks has had negative impacts for other foreign countries. As a result of the Asian financial crisis, which depressed domestic consumption and limited the export market for textile products, ending stocks in many countries rose in 1998/99. While foreign stocks are expected to fall to 35.9 million bales or 5 percent from the previous year, foreign stocks outside China are expected to increase 2 million bales, or 10 percent from the previous year. India, Pakistan and Brazil will account for 44 percent of foreign growth in ending stocks outside China.

U.S. Cotton Situation for 1999/2000

U.S. Area, Yield, and Production

U.S. cotton production in 1999/00 is currently estimated at 16.95 million bales, compared with last season's 13.9-million-bale crop. The U.S. production increase was the result of gains in planted acreage and higher harvested area than a year ago. Yields, however, were below those of 1998/99. Planted area of nearly 14.9 million acres was 11 percent above the previous season and the second largest since the early 1960's. During 1999, cotton acreage in each State equaled or exceeded that of the preceding

year as depressed prices for alternative crops and the safety net supplied by the marketing loan program proved favorable for cotton. Upland area expanded from 13.1 million acres to nearly 14.6 million. In contrast, 1999 extra-long staple (ELS) acreage decreased from 328,000 to 290,000 acres. While conditions seemed more favorable this season, a persistent drought across much of the Cotton Belt and damage from hurricane activity forced U.S. producers to abandon 10 percent of the area planted, half of the percentage abandoned in 1998. Estimated harvested area of 13.4 million acres reflects a 25-percent increase in area from 1998/99. And with the higher harvested acreage, the national yield of 608 pounds per harvested acre fell for the third consecutive season and is the lowest since 1995.

Upland production is estimated at 16.3 million bales this season, but with an average yield of only 596 pounds per harvested acre. U.S. upland production was significantly above last season, but only three of the four cotton regions produced a larger crop than in 1998/99. The exception in 1999 was the Southeast region, where drought and hurricane damage took its toll on the crop there. Despite an increase in area, historically high abandonment and a low regional yield produced a Southeast crop of only 3.6 million bales, the smallest since 1993. The region's yield averaged 538 pounds per harvested acre and was the lowest in 9 years.

In the Delta, cotton planted area reversed its 3-year decline as 3.7 million acres were planted in 1999. The lack of alternative crop prospects led to a 500,000-acre increase in plantings. Coupled with a higher--but still below average--yield of 667 pounds per harvested acre, Delta production rose nearly 1 million bales from last season to 5.1 million. For the Southwest, upland area increased 10 percent to 6.4 million acres in 1999/00. However, drought conditions in this region reduced harvested area to 5.3 million acres, but still well above last season's 3.4 million harvested acres. As a result, yields in the Southwest were reduced to 474 pounds which produced an upland crop of 5.2 million bales, the second largest in 6 years. In the West, upland area fell slightly in 1999 as more cotton was planted to ELS in the region. Upland acreage remained below a million acres for the second consecutive year, the lowest in over 30 years. However, yields improved significantly from last season's weather-reduced yield of 949 pounds per harvested acre to 1,200 pounds this season. As a result, the upland crop in the West exceeded 2.3 million bales, still below the 5-year average.

Meanwhile, ELS cotton production is estimated at a record 696,000 bales in 1999/00. The rise in the ELS crop is attributable to an increase in both harvested area and yields. Harvested area totaled 288,000 acres while the ELS yield averaged a record 1,159 pounds per harvested acre. California continues to increase its dominance of the ELS crop, accounting for nearly 90 percent of the 1999/00 production.

U.S. Mill Use, 1999/00

U.S. cotton mill demand is projected to decline in 1999/00 despite the continued growth in the U.S. retail market for cotton products. Filling much of this consumer demand, however, are less expensive imported textile products from around the world. Due to the continued effects of the Asian crisis and the ongoing trade liberalization of textile and apparel products, the rise in U.S. textile imports is outpacing the gain in exports. And as a result of these rising imports, U.S. mills have been forced to curtail production somewhat to alleviate the buildup of inventories.

U.S. cotton mill use is expected to decline this season to 10.2 million bales, 2 percent or 200,000 bales below 1998/99. Upland mill use is projected to reach 10 million bales while ELS consumption is expected to approach 160,000 bales. During the first 5 months of 1999/00, data from the Department

of Commerce indicate that U.S. mills used 4.2 million bales of cotton, about 3 percent below the comparable period for 1998/99. And despite a slow start, the seasonally adjusted annual rate (SAAR) of cotton consumption has averaged over 10.1 million bales for the August through December period, with the latest available month reaching a SAAR of 10.3 million bales.

A projected slower growth in the U.S. economy, reduced denim production, and the rising textile imports, which have widened the cotton textile trade deficit, will help moderate mill use again this season. And despite rising manmade fiber prices being reported, manmade fiber usage has risen this season. As a result, cotton's share on the cotton spinning system during the first 5 months of 1999/00 has averaged 78.5 percent compared with 79.3 percent for the entire 1998/99 season.

U.S. cotton textile imports, textile exports, and the net trade deficit all rose in calendar 1999. Cotton textile imports increased nearly 11 percent and exceeded 6.5 billion pounds, or the equivalent of 13.5 million bales of raw cotton. On the other hand, U.S. cotton textile exports in 1999 gained over 6 percent reaching approximately 2.1 billion pounds, or the equivalent of 4.3 million bales of cotton. And as a result, the cotton textile trade deficit has risen substantially for the third consecutive year to a new record of more than 9-million-bale equivalents of raw cotton. In total, U.S. consumers purchased the equivalent of 19.5 million bales of cotton in calendar 1999, which indicated a similar per capita consumption of cotton of 34 pounds as in 1998, the highest in 55 years.

U.S. Exports, 1999/00

Unlike mill consumption, U.S. cotton exports are projected to rebound this season. U.S. exports are forecast to jump over 2 million bales from last season's dismal shipment level to reach 6.4 million. Upland exports are projected at 6 million bales while ELS shipments are expected to reach 375,000 bales in 1999/00. Despite strong competition from other major exporters, the U.S. share of the global export market is expected to return closer to the long-term average. Based on the current projections, the U.S. share of world cotton trade is estimated at 24.2 percent, well above last season's 18.4 percent and a relatively strong level when China--as forecast this season--is not a net importer of cotton.

During the first half of 1999/00, U.S. cotton exports totaled about 2.6 million bales, or a shipment average of 95,000 bales per week. With only 40 percent of the forecasted exports shipped, U.S. exports for the last half of the season need to average 154,000 bales per week. Meanwhile, commitments (shipments plus outstanding sales) at the halfway point stood at 6.2 million bales, or 97 percent of the forecast. However, sales beyond the 6.4-million-bale level are needed as some sales are traditionally "rolled over" to the new season. But, unlike last season, these remaining export sales will have the availability of the Step 2 competitiveness program. The Step 2 program, which provides payments to users and exporters of U.S. cotton as needed to improve price competitiveness, was reinstated last October and extended through July 2003.

The increase in U.S. exports--at a time when excess foreign supplies are prevalent--is attributable to several key factors. A much-improved worldwide demand for cotton coincided with a rise in the U.S. crop, which has provided plentiful supplies for the export market, including increased production of short-staple export type cottons. In addition, two U.S. government programs–the marketing loan and the Step 2 payments–have supported U.S. export competitiveness. Merchants' expectations of Step 2 reauthorization permitted them to compete as world prices fell in the first half of the season under pressure from China's sales, at a time when some major competitors were less aggressive sellers. At the same time, the marketing loan program, for which differentials reached a record of nearly 22 cents per

pound, encouraged U.S. producers to actively market their cotton, rather than delay in the hope of a turn-around in prices.

U.S. Imports, Ending Stocks, and Farm Income, 1999/00

While the legislation that revived the Step 2 program also made some changes to the Step 3 program, the effects are expected to be negliable this season. The Step 3 trigger mechanism was shortened but a season limit on raw cotton imports was added. The import limitation equals 5-weeks' consumption of upland cotton by domestic mills at the seasonally adjusted average rate of the 3 months immediately preceding the first special import quota established in the marketing year. Currently, raw cotton imports of less than 100,000 bales are projected for the season, well below last season's imports, which approached 450,000 bales and were largely the result of the small 1998 U.S. crop which was lacking in certain qualities of cotton needed by U.S. mills.

Despite projections of total demand for U.S. cotton rebounding 13 percent from 1998/99 to 16.6 million bales, the gain in production this season is expected to more than offset higher demand and thus boost stocks from beginning levels. Currently, U.S. cotton stocks at the end of 1999/00 are forecast to be 4.4 million bales. Although the actual stock level is 500,000 bales above the previous season, the ratio of ending stocks to total use is virtually unchanged at 26.5 percent.

Government payments are instrumental in supporting farm income this season. At the August-December average farm price of 44.9 cents per pound, gross farm receipts from market sources will reach only $4.1 billion, the lowest in ten years. However, when government payments are added, including contract payments and marketing loan benefits (but excluding Step 2 payments), gross cotton farm income rises to $6.7 billion, above last season but below the 1997/98 level. Looking at returns on a net basis, the combination of 1999/2000's low market prices and low yields results in a market income below estimated variable costs. Adding government payments raises net returns to an estimated $150 per planted acre, the lowest level since 1995/96.

World and Foreign Cotton Outlook for 2000/2001

USDA's early projections show lower foreign, but higher U.S. production for next season. World consumption is likely to continue to rise and reach a record 89-91 million bales, and there is good potential for the United States to capture a very competitive share of the world export market. The scenario that we envision, which is based on normal weather and crop conditions, results in lower world stocks at the end of the season, with U.S. stocks rising. China is forecast to revert to a net importer by a modest margin, following two years in which total exports reached a cumulative total of 1.8 million bales.

Foreign Production for 2000/2001

In 2000/2001, world production is likely to total between 84 and 86 million bales, or between 2 percent and 3.5 percent lower than during the year before. With U.S. production rising, foreign production is foreseen between 65 and 67 million bales. Foreign production is expected to decline 2 to 4 million bales from the year before in 2000/2001 as China's producers respond to lower procurement prices, yields return to normal in Central Asia and Pakistan, and low world prices during the first half of 1999/2000 discourage 2000/2001 production in a number of countries.

It is a longstanding truism that inflation-adjusted prices for cotton and other farm and unprocessed products fall over time, but 1999/2000's price developments were remarkable nonetheless. With the A-

index averaging 47.7 cents for the marketing year through January, it has averaged to date 34 percent below the index's inflation-adjusted average for the 1985/86 marketing year, and, if unchanged during the rest of year, appears on track to mark the second consecutive year below this previous nadir. Some decline in foreign area seems likely in such circumstances, but currently, only a modest decline in foreign area and production is foreseen.

Based on its year-to-date level, the A-index in 1999/2000, in inflation-adjusted terms, has fallen for its fifth consecutive year, a string of declines last approached during the first half of the 1980's. Looking back at that time, it is difficult to discern a foreign area price response during that period--most of the decline at that time occurred in China, which was far less integrated into world markets than today and had internal reasons for drastically reducing area. Conceivably, the surge and decline in China's area during the first half of the 1980's was a government-coordinated attempt to respond to the world price signals of the last half of the 1970's and early 1980's, but that still leaves a price response from the rest of the world during that period that was not particularly strong.

During two other periods that followed declining prices (1975/76-76/77 and 1992/93-94/95), foreign area outside of China declined by about 10 percent. Given that recent price changes have been of comparable magnitude to those earlier, one could hypothesize a foreign area of 24.5 million to 25.5 million hectares for 2000/2001. However, based on a survey of Foreign Agricultural Service attaches, USDA analysis in Washington, and historical trends for countries lacking attache reporting, USDA currently foresees 2000/2001 area to total between 26 and 27 million hectares. In comparison, the International Cotton Advisory Committee forecasts foreign area to be even higher, exceeding 27 million hectares. Clearly, according to more than one source, foreign production in 2000/2001 is not expected to decline as strongly as during the mid-1970's and early 1990's. As has sometimes been the case in the past, low levels for competing crop prices, supportive government policies in some countries, and random shocks are expected to partly mute the world's area response to 1999/2000's precipitous decline in prices.

China's area is likely to decline in 2000/2001 despite recently recovering prices there. While competing crop prices are weak in China, the effects of 1999/2000's reforms and drastic price decline will continue to unfold, and production could range between 16 and 17 million bales even if yields maintain their strength of recent years.

Lower production is also likely across much of Central and Southern Asia as yields revert to mean levels. While technical advances probably improved 1998-crop yields in Pakistan and Turkmenistan, geographic proximity suggests that favorable weather was a major factor raising yields across the region extending from India's Punjab north to Uzbekistan and Turkmenistan, and all of the affected countries are thus likely to face more average circumstances in 2000/2001.

Together, Turkmenistan and Uzbekistan could produce about 500,000 bales less than the year before in 2000/2001, as their production falls from 6.5 million bales back to 6.0 million, its average over 1997/98-1999/2000. In India, in addition to the possibility of lower yields in Punjab and Haryana, area planted to cotton is likely to fall since prices have fallen, and stocks are expected to rise. Area could even decline in Pakistan, albeit by a slight amount, following low prices, and, with Pakistan's yields dropping closer to recent averages, Pakistan and India could together produce about 2 million bales less cotton than the year before in 2000/2001.

Elsewhere in the world, area is likely to be down in Mexico, traditionally a country highly responsive to world price changes, but there are few remaining obvious candidates for lower area given the circumstances peculiar to each of the major producers.

Turkey's area would not necessarily be expected to change, given that the Southeast region's decades-spanning irrigation development project is steadily bringing new area into production, offsetting declines in traditional cotton growing regions. Similarly, Australia's irrigated area seems to fluctuate more in response to the availability of irrigation supplies--which are expected to be good in 2000/2001--than in response to declines in world prices. Nearly every year seems to bring news of newly irrigated cotton areas opening up in Australia. And Africa's Franc Zone also has been on an upward trend, responding to lower prices over the long run with pauses in expansion rather than with area contractions. Finally, Brazil has been on an upward trend in recent years, and with government support for agriculture, new highly-productive regions increasingly investing in cotton, and an earlier devaluation that has improved the competitiveness of its textile industry and economy in general, a reversal is not widely foreseen for Brazil's area and production in 2000/2001.

Foreign Consumption and Trade in 2000/2001

World cotton consumption is forecast to increase 1.5-2.0 percent from its year earlier level due to the lagged effect of very low prices. This would bring consumption above the peak achieved in 1996/97 before the Asian financial crisis. Stronger projected world GDP of more than 3 percent in 2000 and 2001 supports the rise in consumption, as does the current more favorable relationship of cotton prices to those of manmade fibers. In the longer run, a slower rate of consumption growth is expected, but 2000/2001 is expected to be slightly above average due to lagged cotton prices and recovering economic prospects in several markets. While the U.S. economy is likely to slow as 1999/2000 moves into 2000/2001, improvement is expected for much of the rest of the world.

Recent reports suggest Italy's textile industry has shown signs of recovery in recent months, such that the European Union's cotton consumption could perhaps stabilize, rather than fall for a third consecutive year. Similarly, while Russia's late-1998 devaluation was initially disruptive, the prospect of the first notable GDP increase in more than a decade--now that the currency's correction has been internalized--suggests better prospects for cotton textiles in Russia. In neither case is a substantial increase likely, but the world consumption total is less likely to be burdened with declines in these regions as has been the case in recent years.

In China, the return of the textile sector to profitability has reduced the emphasis on the spindle-reduction program of the last few years. The textile industry's input costs in 2000/2001 will certainly be below pre-reform levels, and a second year of consumption growth is likely for the world's largest consumer. Both larger textile exports and increased domestic demand are likely to boost cotton consumption. China's GDP growth is expected to reach 8.6 percent in 2001, compared with 7.7 percent in 2000 and 7.1 percent in 1999; rising incomes will, in turn, raise consumer demand for textiles and improve prospects for global cotton consumption.

China's net trade position will continue to play a pivotal role in the world cotton situation, as it has the past several seasons, and uncertainties about China's policies and statistics cloud the outlook. We project that consumption will exceed production for the second consecutive year–with China's cotton

mill use rising, 2000/01 consumption of roughly 21 million bales is anticipated to exceed production by 4 to 5 million bales.

China could meet this need by: (1) releasing stocks from the government-held inventory; (2) increasing quotas to allow foreign imports and/or (3) forcing textile mills to operate with less cotton. Given the importance of China's textile industry to its domestic economy and foreign trade, we deem it unlikely that the government would permit a serious cotton shortage to develop. On the other hand, we also believe that central government decisions to incur the considerable cost of releasing cotton from stocks may lag the expanding requirements of China's mills. This leads us to the conclusion that China is likely to be a modest net importer of cotton in the 2000/01 season.

With decreased world production and increased consumption, world ending stocks are forecast to fall 8 to 16 percent, to 34-37 million bales. China's stocks are forecast to fall by nearly 4 million bales, accounting for the majority of the reduction in world stocks.

U.S. Cotton Outlook for 2000/2001

U.S. Area, Yield and Production, 2000/2001

Preliminary estimates for 2000 U.S. area suggest an increase to 15.0-15.5 million acres, including about 250,000 acres of ELS cotton. With a normal weather assumption, an abandonment rate of about 7-8 percent is projected, about equal to the 1990's average. A national average yield of 630-635 pounds per harvested acre is applied. This yield projection, which is below the long-run trend, reflects the recent stagnation in U.S. yields overall and a larger share of total area in the lower-yielding Southwest region. Combining these projections results in the production range of about 18.0-19.0 million bales. However, this is at best an indicator of direction, given the uncertainties surrounding producers' planting intentions and likely yield variations across the Cotton Belt. USDA's survey of producers' planting intentions will be published on March 31.

Both statistical analysis and anecdotal evidence suggest that cotton planted area will rise slightly from 1999's 14.86 million acres. An area response model developed by USDA's Economic Research Service indicates that plantings may increase by about 500,000 acres in the spring of 2000. The model projects shifts in acreage based on a comparison of the prices producers expect for cotton and alternative crops (see the *Cotton and Wool Situation and Outlook Yearbook*, USDA, November 1999). These effective prices are based on the current values of 2000-crop futures prices plus any anticipated marketing loan benefits. For example, as of February 1, the model assumed that producers were expecting a 2000 cotton price of 68 cents per pound, including the December 2000 futures price plus an anticipated marketing loan gain of 10 cents per pound.

Using the same methodology, producers expected only about 64 cents per pound for the 1999 crop in the spring of 1999. While year-to-year changes for alternative crops, such as corn, grain sorghum, and soybeans, were also positive, alternative crop prices have not risen sufficiently to offset the increase for cotton. Thus, the model projects a small net area shift to cotton, confirming recent survey estimates by the National Cotton Council and others. Increases are expected for all regions of the Cotton Belt, but ELS planted acreage is expected to decline due to the price-depressing effects of the recent accumulation of surplus stocks. This area projection would be the second-highest since 1962, exceeded only by 1995's 16.9 million acres planted.

U.S. Mill Use, 2000/01

On the demand side, U.S. GDP has been spectacular over the past 3 years and is expected to grow more slowly in the upcoming marketing year than it has in recent years. As a result, slower growth in retail cotton consumption, coupled with increased cotton textile imports, will likely result in mill use exhibiting little change in the 2000/01 season. U.S. retail cotton consumption could exceed 21-million-bale equivalents in 2000/01 with only modest growth. However, as in the current season, much of this growth will likely be satisfied with textile imports. A marginal offset to some of the growth in textile imports will be provided by the expected increase in cotton textile exports, gains largely attributable to NAFTA and CBI. Given the effects of ongoing trade liberalization, cotton textile trade will likely continue to expand and play a major role in the amount of cotton demanded by U.S. mills. Based on current projections, U.S. cotton mill use in 2000/01 is likely to range somewhere between 10 and 10.5 million bales, about unchanged from the current season.

U.S. Exports and Ending Stocks, 2000/01

With higher U.S. production, lower foreign production and continued support from the Step 2 program, the U.S. is expected to capitalize on the recovery in world demand with increasing U.S. exports next season. In addition, export competition from China is forecast to diminish next season as China once again could return to the net importer status. Much, of course, will depend on the success of policies to reduce stocks and the quality and accessibility of those stocks in relation to the rest of the world.

Exports in the range of 7.5 to 8 million bales are consistent with the world projections outlined here and would be near the levels achieved during the mid-1990's. This range would be as much as 25 percent above the current season's projection and well above the 5-year average of approximately 6.5 million bales.

And despite the projected rise in U.S. exports in 2000/01, larger anticipated production gains are likely to push U.S. stocks higher. Based on these projections of cotton supply and demand, U.S. stocks could rise as much as one million bales from beginning levels. However, this gain in 2000/01 stocks would imply perhaps only a slightly higher ratio of stocks relative to total use, ranging between 25 and 30 percent.

Effect of the MFA Phaseout on the Medium-Term U.S. Outlook

International trade in textiles and apparel has been governed by quantitative restrictions under the Multi-Fiber Arrangement (MFA) and earlier agreements for more than 30 years. During the Uruguay Round, however, the conclusion of the Agreement on Textiles and Clothing provided for the dismantling of those restrictions. These MFA restrictions are to be phased out over a 10-year period and are scheduled to end by 2005. With quotas and other restrictions eliminated, tariffs will become the primary mechanism for border protection as the same rules will apply to trade in textiles and clothing as in other goods.

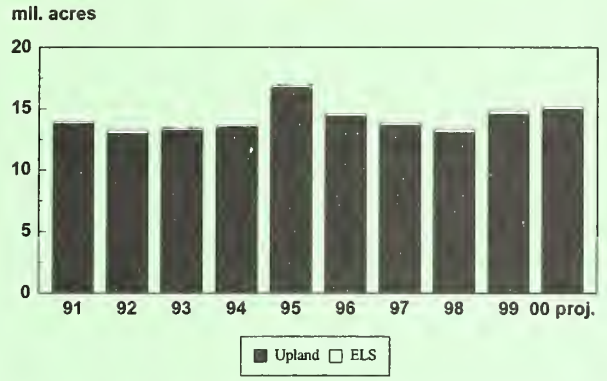
For the United States, cotton textile imports have played an increasing role in total domestic consumption (mill use plus net textile trade). In calendar 1999, the raw-fiber equivalent of cotton textile and apparel imports has exceeded the quantity used by domestic mills for the second consecutive year. Just 10 years ago, these imports totaled only about 60 percent of U.S. cotton mill use. Although a larger percentage of U.S. cotton is estimated to now be contained in these textile imports, the import trend has risen dramatically, suggesting a structural shift in the related industries that will likely continue as the MFA phaseout is completed. While adjustments to the phaseout almost certainly imply a

declining trend over the longer term for U.S. mill use, U.S. raw cotton exports could more than offset this decline as the U.S. remains a reliable supplier to a growing world demand for cotton textile and apparel products.

Conclusion

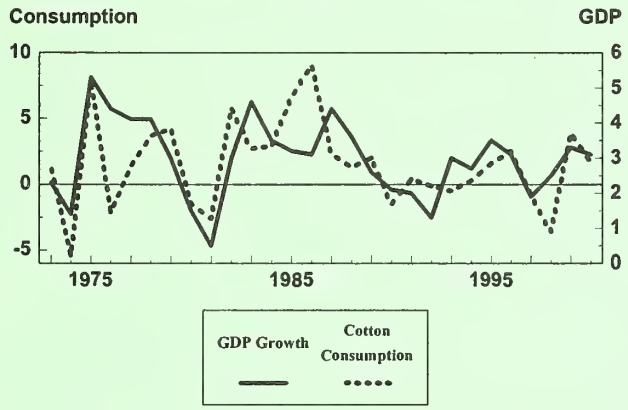
It is important to keep in mind the many uncertainties, including weather developments, economic growth trends, and government policies, that will affect the supply-demand outlook. China's policies, especially those directed at surplus disposal, will have a fundamental impact upon the world outlook. In examining income prospects, producers have a menu of tools for managing price risk, most of them based directly or indirectly on the New York futures market; however, they must also be cognizant of the role of the world price A-index in determining the loan deficiency payment (LDP) level. Thus, it is important to follow both U.S. and world developments in planning for the 2000 crop.

U.S. Cotton Planted Area
1991-2000 projected

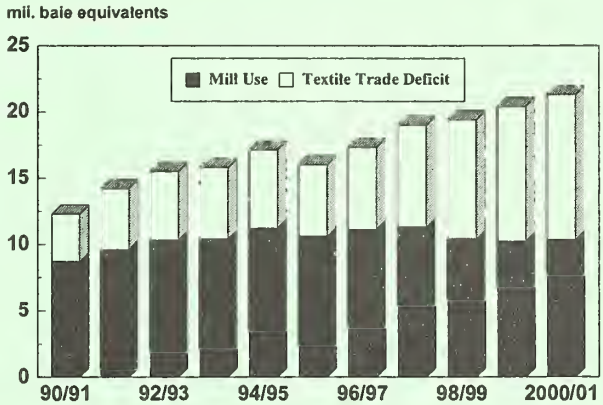


World Stocks: U.S., China and Other Foreign
1995/96 - 2000/01

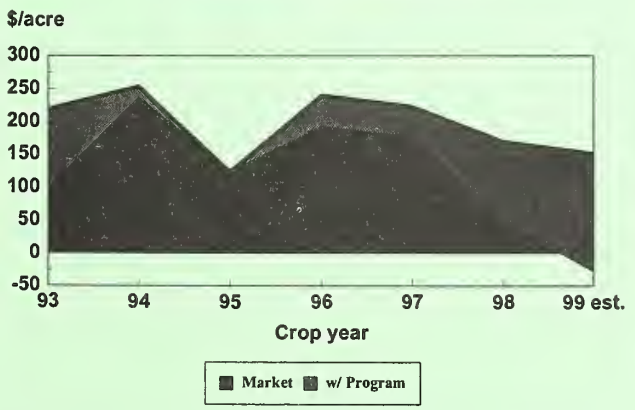
Percent Changes in World Cotton Consumption and GDP



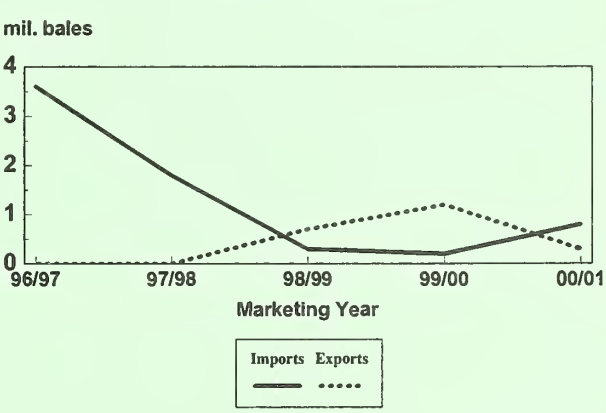
U.S. Cotton Mill Use and Textile Trade Deficit



Net Returns over Variable Cost
Market and Program Income



China Trade Estimates



GRAINS AND OILSEEDS OUTLOOK FOR 2000[1]

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The outlook for the 2000 crops of wheat, corn, and soybeans continues to be dominated by expectations for large stocks and low prices. Carryout stocks for the current marketing year (1999/2000) are projected to remain near or exceed last year's levels. Wheat carry-out stocks are expected to approach 1 billion bushels, 2.7 times the carry-out for 1995/96; corn carry-out stocks are projected to remain above 1.7 billion bushels, over 4 times the 1995/96 carry-out; and soybeans stocks of 345 million bushels would be about 2.6 times the previous low in 1996/97.

Given these expected stock levels, it is not surprising that crop prices for 1999/2000 are forecast to average the lowest since the mid-1980's. Corn prices, projected to average $1.90 per bushel, are down for the fourth consecutive year and 40 percent below the high of $3.24 per bushel in 1995/96. Wheat prices, forecast at $2.55 per bushel, are also expected to be down for the fourth consecutive year and 44 percent below the high of $4.55 per bushel in 1995/96. Soybean prices, forecast at $4.75 per bushel, are down for the third consecutive year and 35 percent below the high of $7.35 per bushel for 1996/97.

Will Plantings Decline in 2000?

One of the major changes in U.S. farm policy resulting from the 1996 farm act was the decoupling of program payments from planting decisions. In addition substantial area became available to plant from the elimination of annual set aside programs. Not only were set aside acres released, but program crop plantings were no longer restricted by base acres and compliance restrictions. It was expected that producers would respond to market signals, reducing plantings of lower income crops and increase plantings of higher income crops.

With the sharp decline in market prices during the last several years, one might expect that 1999 plantings would have been substantially below the 1996 and 1997 levels. Planted area of the three major field crops was down about 5 million acres, but this is only 2.3 percent of the total

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[1]The author is indebted to the following interagency commodity estimates (ICEC) committee members for contributing most of the material for this speech–Gerald R. Rector, WAOB; James L. Matthews, WAOB; Keith Menzie, WAOB; Allen J. Baker, ERS; and Mack N. Leath, ERS. In addition to the above contributors, Philip Sronce, FSA; Paul Westcott, ERS; and Barbara Fecso, FSA provided many review comments which have been incorporated into the paper.

planted area of wheat, corn, and soybeans in 1996 and 1997. As indicated above, prices of these commodities declined between 35 - 45 percent from their previous highs. Thus, for each 1 percent decline in farm prices, planted area of the three major crops declined by less that one-tenth of one percent. Continuing structural shifts in acreage following the elimination of base acreage constraints are part of the reason that this aggregate acreage response to price is small.

In the short run, producers are likely to plant as long as variable cash expenses are covered by production-related revenues (market receipts plus marketing loan benefits), Table 1. Production-related revenues per acre have exceeded variable cash costs per acre even though prices have declined markedly. Additionally, nonproduction-related sources of revenue, including production flexibility contract (PFC) payments and market loss assistance payments have supplemented producer's farm cash flow.

Table 1. Comparison of Per Acre Returns: Wheat, Corn, and Soybeans–Selected Years

	Wheat		Corn		Soybeans	
	1997	2000	1997	2000	1997	2000
			$/acre			
Market Receipts	133.51	108.08	307.88	264.23	251.68	178.00
LDP/MLG[1] Payments	0.40	9.43	1.27	29.81	0.39	38.80
Production-Related Returns Per Acre	133.91	117.51	309.15	294.04	252.07	216.80
Variable Cash Costs	70.49	69.36	157.92	157.64	79.43	79.76
Production-Related Returns Above Variable Cash Costs	63.42	48.15	151.23	136.40	172.64	137.04

[1]Loan Deficiency Payments (LDPs) and Marketing Loan Gains (MLGs).

Given the cash flow levels generated by market receipts and government payments in recent years, it is likely that total plantings of wheat, corn, and soybeans will remain near the 214 million acres planted in 1999. However, there will be continued shifts between the crops. Wheat plantings for the 2000 crop are likely to decline for the fourth consecutive year as producers continue to favor feed grains and oilseeds in many parts of the Corn Belt and northern Plains States. The *Winter Wheat Seedings* report released by the National Agricultural Statistics Service (NASS) on January 12, 2000, showed winter wheat plantings down 515,000 acres to 42.9 million and the lowest seedings since 1972. Spring wheat plantings are also expected to drop, with most of the reduction coming in durum. Thus, all wheat plantings in 2000 are projected at 62 million acres, down 800,000 from 1999.

Little change in corn plantings is anticipated for 2000 as expected prices are little changed from a year earlier. Some areas in the Midwest are likely to see expanded corn planting in

response to rotation needs, while others will likely continue to lose area to soybeans. Corn plantings are projected at 77 million acres, down less than 500,000 acres.

Although soybean prices have remained below $5.00 per bushel since early 1999, prospects are good for the eighth consecutive annual increase in soybean plantings as producers continue to consider the soybean loan rate and large recent LDP/MLG rates in their planting decisions. With relatively low prices for corn and wheat expected this spring, producers are forecast to plant a record 75 million acres of soybeans, up 1.2 million from last year, and up over 17 million acres since 1990. Up to 500,000 acres of additional soybeans are likely to be planted in the western Corn Belt, especially in Nebraska and Kansas, where producers continue to reduce wheat plantings. An additional 500,000 acres could also be planted this year in the eastern Corn Belt influenced by both relative returns and crop rotation considerations.

Wheat: Supply, Demand, and Price Outlook for 2000/01 (Table 2)

Supply: Supply prospects for wheat in 2000/01 are impacted by the expected decline in planted area and dryness in parts of the major hard red winter wheat region, especially in the southern and central Plains. These regions have been dry for several months and continued dryness would potentially reduce both yields and harvested acres. In recent years, USDA has used the average yield for the three previous years as the yield forecast for the new crop. This would result in a yield forecast of 41.8 bushels per acre for the 2000 crop. By using a 5-year average yield, two years with weather-reduced yields would lower the projected yield for the new crop to reflect the stress experienced to date. The State-weighted average yield of wheat for the previous 5-years is just over 39 bushels per acre.

Using the 62 million acres planted and the average of the harvested-to-planted ratios during the previous 5 years, gives a projected harvested area of 54 million acres. Thus, all wheat production is projected at 2,120 million bushels, down 7.5 percent from 1999 production.

Lower production in 2000/01 is somewhat offset by the larger carryin stocks. With wheat imports near last year's level, total wheat supplies are projected at 3,217 million bushels, down nearly 4 percent.

Demand: Total use of wheat in 2000/01 is expected to remain weak. Food use will continue to show some growth, but feed and residual use will likely decline because of low corn prices. Total domestic use of 1,275 million bushels is projected down nearly 20 million bushels.

World import demand in 2000/01 is expected to remain relatively flat. Much of the Middle East, especially Iran, remains dry and their demand will remain strong. However, crop conditions in most other major importing countries are generally favorable. Weather conditions in the next two to three months will be critical and import needs could change dramatically. Thus, barring any yield-related production shortfalls in key importing countries, U.S. wheat exports in 2000/01 will largely depend on the strength of competition from foreign exports.

Carryin stocks for the four major foreign competitors will be down from 1999/2000, but production will likely expand. Winter wheat plantings in the European Union (EU) are up sharply in response to better weather conditions last fall and expectations of better returns for wheat than most competing crops. Wheat plantings in Canada are also expected to rise in 2000/01 because of more favorable prices and rotational needs. Little change in wheat planting is expected for Australia and Argentina, and their crops will remain near 1999/2000 levels. In addition, U.S. wheat exports will likely face increased competition from larger Eastern Europe crops.

Given expectations of continued larger supplies in major exporting countries and flat import demand, U.S. wheat exports are projected to remain flat in 2000/01 at 1,050 million bushels. Thus, total use of wheat is expected to be little changed from 1999/2000 forecast levels.

Stocks and Prices: Given the flat use, the smaller supplies will translate into a decline of over 100 million bushels to 892 million in 2000/01 ending stocks. This level of stocks would represent 38.4 percent of projected use, down from the 42.5 percent forecast for the current year. The tighter supply/use balance is expected to boost prices about $0.20 per bushel to near $2.75 per bushel.

The export projections for 1999/2000 and 2000/01 do not include the planned fiscal-year 2000 (October 1999 - September 2000) donations of approximately 3 million tons of food aid announced on February 10, 2000. Commodities to be donated include wheat and wheat flour, soybeans and soy products, rice, and milk powder. About 75 percent of the donations are expected to be wheat and flour (2.25 million metric tons or 83 million bushels). At this time, it is uncertain if the wheat/flour component will be shipped in the 1999/2000 marketing year or the 2000/01 marketing year. If purchases for these donations occur mostly in the 2000/01 marketing year, wheat prices in 2000/01 could increase about $0.10 per bushel.

Corn: Supply, Demand, and Price Outlook for 2000/01 (Table 3)

Supply: In about two months, corn producers will begin to plant the 2000 corn crop. Weather and market conditions from now through the planting season will have considerable impact on the actual plantings. The current outlook is based on available information as of early February. As indicated above, the outlook is for a slight decline in planted corn area to 77 million acres. Taking into account recent level of harvesting for silage and abandonment, leaves a harvested area of 70.3 million acres.

USDA has historically based corn yields on a long-term simple linear trend using national average yields from 1960 to the present. Other models have been developed which incorporate growing season weather factors, planting progress as of mid-May, and a linear time trend (Westcott). Another method is to use ear counts and ear weights reported by NASS for the 7 objective-yield States.

Using historical average values for mid-May planting progress and assuming some variation (plus or minus one standard deviation) around normal weather suggests that 2000/01 corn yields will be near 135.5 bushels per acre. Similar results are implied by using trend growth in the

number of ears per acre and average ear weights, with forecast yields for the 7 objective-yields States correlated to the national yield using historical averages. Thus, corn production in 2000/01 is projected at 9.5 billion bushels, up nearly 90 million bushels from last year's out-turn and the fifth consecutive crop to eclipse the 9 billion bushel mark. The larger crop will more than offset slightly lower carryin stocks to keep total corn supplies in excess of 11 billion bushels for the third consecutive year.

Demand: Domestic use of corn in 2000/01 is projected to increase only about 1 percent as food, seed, and industrial (FSI) uses increase about 4 to 5 percent and feed and residual use remains flat. All of the individual components of FSI are expected to increase except seed. The growth rate of the use of corn for production of high-fructose corn syrup (HFCS), glucose and dextrose, and starch is expected to reflect the rate of population growth, slightly slower than in recent years. Corn used to produce fuel alcohol is forecast to grow 12 percent in 2000/01 from the year earlier. Incentives from a domestic commodity industrial use program, which are assumed for these projections, would likely boost corn used in alcohol production to near plant capacities. Corn used in beverage and manufacturing alcohol plus cereals and other production are forecast to grow about 1 percent per year, near the rate of increase in the population.

Feed and residual use of corn is projected to remain unchanged for 2000/01 as growth in some livestock sectors is offset by reductions in others. Milk production is forecast to increase through 2001, keeping feed demand strong in the dairy sector. Similarly, the poultry sector is also expected to continue to expand. However, beef and pork production will slip slightly through 2001, reducing feed needs in these sectors. Feed and residual use of all grains in 2000/01 is forecast to be slightly less than in 1999/2000. Feed and residual use of wheat, barley, and grain sorghum is expected to decline. These reductions will allow corn feed and residual use to remain flat in 2000/01.

U.S. corn exports in 2000/01 are not expected to increase. There will likely be some growth in global demand due to larger imports by Mexico and parts of South America and Asia, but competition from Argentina and China will remain the key to U.S. export prospects. Corn stocks remain large in China, but lower procurement prices announced by the government may lead to lower planted area. Thus, China's exports will reflect government decisions regarding export subsidies and will be subsequently influenced by the timing of WTO accession. Larger plantings and trend yields are expected to produce another large crop in Argentina. If a large European wheat crop materializes as expected, corn exports to some countries, particularly South Korea, could also face competition from wheat.

On balance, U.S. corn exports face a very competitive outlook in 2000/01 and are projected to show a small decline from this year. Increased domestic use of corn is expected to offset the projected small decline in exports, resulting in a very modest increase in total use to 9.56 billion bushels.

Stocks and Prices: The small increase in total use in 2000/01 exceeds the crop by a slim 36 million bushels. Adjusting for the small imports results in a drop in ending stocks to 1.714 billion bushels. This level of stocks represents 17.9 percent of use, down just 1 percentage point from

the forecast 1999/2000 stocks-to-use ratio. As a result, farm prices of corn are again expected to average below $2.00 per bushel. Although stocks remain large compared to the mid 1990's, they are relatively small compared with the growing use. This will make markets extremely sensitive in the coming months to weather developments and export prospects. For example, if corn yields are equal to the long-term simple linear trend of 133.8 bushels per acre, they would still match last year's third highest yield on record. However, given this yield and no change in use from our projections for 2000/01, ending stocks would drop below 1.6 billion bushels and add 5 cents to the forecast price.

Soybeans: Supply, Demand, and Price Outlook for 2000/01 (Table 4)

Supply: Soybean yields for 2000 are projected to reach 40 bushels per acre based on stronger trend growth since the mid 1980's when growers turned to narrower row-width planting practices. Nevertheless, yields are projected below the 1994 record of 41.4 bushels per acre. Last year's yield of 36.5 bushels per acre reflected unusually dry conditions during the critical pod-set and pod-filling stages in late July and early August. Eastern Corn Belt States and Iowa together accounted for 1.5 out of the 2.4 bushel year-to-year decline from 38.9 bushels per acre achieved in 1998.

Trend yields combined with record harvested area will produce a record U.S. soybean crop of 2.96 billion bushels in 2000. A record crop coupled with carryover stocks of 345 million bushels will set the stage for U.S. soybean supplies to exceed 3 billion bushels for the first time.

Demand: Domestic disappearance of soybeans is expected to increase due to higher domestic and export demand for soybean meal and soybean oil. Soybean crushing is forecast at a record 1.65 billion bushels based on projected increases in total meal and oil demand of 3 percent and 6 percent, respectively. Domestic meal use is projected to increase 2 percent, close to this past year. Expansion in broiler production will boost protein feeding even though beef and hog operations will contract for the second consecutive year. Meal prices are expected to remain near $150 per ton. With the exception of 1998, when prices declined to $138 per ton, meal prices will be the lowest in over 15 years.

Foreign protein meal use is projected to increase 3.4 percent in 2000/01, with demand for soybean meal increasing only 1.5 percent as competition from other meals such as rapemeal remain intense. Asia will provide most of the growth, even though China and Japan will not contribute much to soybean meal imports. European soybean meal imports may decline 1-2 percent as increased availabilities of other meals, policy changes, and a weaker Euro combine to reduce soybean meal competitiveness with other feedstuffs. Although growth prospects for global soybean meal trade will be limited, reduced competition from South America will permit U.S. soybean meal exports to grow about 9 percent to 7.6 million short tons, the first increase since 1997, Table 5.

Strong growth in the demand for soybean oil is expected in response to the lowest soybean oil prices since 1971. However, record domestic use and a rebound in soy oil exports from low levels projected for 1999/2000 will not be enough to offset record supplies. As a result, U.S.

soyoil stocks are expected to increase to a new high by the end of the marketing year, Table 6. Strong growth in palm oil trade will limit prospects for soyoil this year as large palm oil production and stocks continue to weigh on the global vegetable oil market. Furthermore, the major importers of vegetable oils, particularly India and China, may be a drag on demand as both countries follow more restrictive import policies and oilseed production expands. Internally, China currently enjoys a $350.00 per ton premium for soybean oil compared with world prices.

Although the U.S. soybean supply is projected to increase by over 10 percent, soybean production in the rest of the world is expected to increase only slightly from 1999/2000. Continued low prices and large U.S. and global stocks of oilseeds and edible oils will weigh on foreign producers' decisions in the year ahead, likely causing modest production declines in competing soybean and other oilseed producer-exporter countries. Importing countries, such as China and India, could experience some increase in oilseed crop production, but not enough to meet their internal demand growth.

Soybean exports are projected at 985 million bushels in 2000/01, exceeding the growth projected for 1999/00. U.S. exports will be boosted by larger U.S. availabilities, reduced South American supplies, and expanded foreign import demand. China's policy of restricting imports of oilseed products will also provide additional growth for soybean and rapeseed imports in 2000/01, when soybean imports could reach a record 5 million tons. The likely cutback in South American competition will be mainly in response to a draw-down in inventories from 1999/2000 and lower new-crop acres and production in response to low prospective prices at planting time this fall. Based on current price projections, the soybean/corn price ratio in the fall could decline to below 2.4 compared with a level of around 2.6 last fall, which would provide incentive for producers to switch to corn, particularly in Argentina.

Stocks and Prices: Overall, U.S. soybean ending stocks are expected to exceed 500 million bushels at the end of 2000/01, the largest carryout since the record 536 million bushels in 1985/86. Prices are forecast to continue to weaken through 2000/01, with the season average price projected to decline to the low to mid $4 per bushel range. Producers' incomes, however, will continue to be protected by the marketing loan program. If prices reach the projected level, program outlays will likely exceed the $1.9 billion spent so far for the 1999 soybean crop.

Reference:

"Westcott, Paul. "A Corn Yield Model Incorporating Planting Progress and Weather Variables," Feed Outlook, FDS-0396, March 1996. (Available electronically through the ERS Corn Briefing room at: http://www.econ.ag.gov/briefing/corn/articles)

Table 2.--Wheat: Supply, Demand, and Price

	1998/99	1999/2000 1/	2000/01 2/
Area planted (mil. acres)	65.8	62.8	62.0
Area harvested	59.0	53.9	54.0
Yield (bu./acre)	43.2	42.7	39.3
Production (mil. bushels)	2,547	2,302	2,120
Beginning Stocks	722	946	997
Imports	103	95	100
Supply	3,373	3,343	3,217
Feed and residual	397	300	275
Food, seed, & industrial	988	996	1,000
Total Domestic Use	1,384	1,296	1,275
Exports	1,042	1,050	1,050
Total Use	2,427	2,346	2,325
Ending Stocks	946	997	892
Farm Price ($/bushel)	$2.65	$2.55 3/	2.75

1/ Forecast. 2/ Projected. 3/ Mid-point of forecast range.

Table 3.--Corn: Supply, Demand, and Price

	1998/99	1999/2000 1/	2000/01 2/
Area planted (mil. acres)	80.2	77.4	77.0
Area harvested	72.6	70.5	70.3
Yield (bu./acre)	134.4	133.8	135.5
Production (mil. bushels)	9,759	9,437	9,525
Beginning Stocks	1,308	1,787	1,739
Imports	19	15	10
Supply	11,085	11,239	11,274
Feed and residual	5,,496	5,650	5,650
Food, seed, & industrial	1,822	1,900	1,985
Total Domestic Use	7,318	7,550	7,635
Exports	1,981	1,950	1,925
Total Use	9,298	9,500	9,560
Ending Stocks	1,787	1,739	1,714
Farm Price ($/bushel)	$1.94	$1.90 3/	$1.95

1/ Forecast. 2/ Projected. 3/ Mid-point of forecast range.

Table 4.--Soybeans: Supply, Demand, and Price

	1998/99	1999/2000 1/	2000/01 2/
Area planted (mil. acres)	72.0	73.8	75.0
Area harvested	70.4	72.5	74.0
Yield (bu./acre)	38.9	36.5	40.0
Production (mil. bushels)	2,741	2,643	2,960
Beginning Stocks	200	348	345
Imports	3	3	6
Supply	2,944	2,994	3,311
Crush	1,590	1,600	1,655
Seed, & residual	205	159	161
Total Domestic Use	1,795	1,759	1,816
Exports	801	890	985
Total Use	2,595	2,649	2,801
Ending Stocks	348	345	510
Farm Price ($/bushel)	$4.93	$4.75 3/	$4.45

1/ Forecast. 2/ Projected. 3/ Mid-point of forecast range.

Table 5.--Soybean Meal: Supply, Demand, and Price

	1998/99	1999/2000 1/	2000/01 2/
Beginning Stocks (thous. short tons)	218	330	275
Production	37,792	38,045	39,335
Imports	99	50	65
Supply	38,109	38,425	39,675
Domestic Use	30,662	31,150	31,800
Exports	7,117	7,000	7,600
Total Use	37,779	38,150	39,400
Ending Stocks	330	275	275
Avg. Meal Price ($/ton)	$138.50	$155.00 3/	$150.00

1/ Forecast. 2/ Projected. 3/ Mid-point of forecast range.

Table 6.--Soybean Oil: Supply, Demand, and Price

	1998/99	1999/2000 1/	2000/01 2/
Beginning Stocks (million pounds)	1,382	1,520	2,130
Production	18,081	18,080	18,700
Imports	82	80	65
Supply	19,546	19,680	20,895
Domestic Use	15,655	15,900	16,250
Exports	2,372	1,650	2,300
Total Use	18,027	17,550	18,550
Ending Stocks	1,520	2,130	2,345
Avg. Oil Price ($/pound)	$0.199	$0.160 3/	$0.150

1/ Forecast. 2/ Projected. 3/ Mid-point of forecast range.

Agricultural Outlook Forum 2000
Washington, DC, February 25, 2000

THE TRANSFORMATION OF RURAL AMERICA: NEW LATINO COMMUNITIES IN AGRICULTURAL REGIONS

Dr. Víctor García

Introduction

This morning, I want to address the unprecedented transformation that many non-metropolitan and agricultural regions of the United States are undergoing. Researchers, who have been examining this process, have labeled it the "Latinization of rural America". More important, I want to focus my talk on how we in this panel—labor organizers, representatives of agriculture and the meat processing industries, public servants, and researchers—can work together to prevent these new immigrants from becoming members of a rural underclass doomed to a life of poverty. I want to do this by briefly discussing areas in need of exploration that may assist the immigrants to help themselves to realize, what in the past, for a variety of reasons, have been elusive for many of them, the "American Dream".

Rural Transformation and New Latino Communities

I would like to start with a little background about this rural transformation. According to U.S. census figures, there are nearly 30 million Latinos, or Latin American-origin residents, in the United States (U.S. Bureau of Census, 1997).[1] About 16.9 million of them were born in the country, while 13.1 million were born abroad (U.S. Bureau of Census, 1997). A disproportionate number of them reside in metropolitan areas across the country, and the vast majority of the immigrants among them work in urban-based service and retail industries (Hughes, 2000). However, a growing number of the Latino newcomers are also settling in non-metropolitan areas and work in agricultural industries. In general, for example, the non-metropolitan Latino population grew from 1.8 million to 2.4 million between 1980 and 1990, an increase of 30 % (Rochin & Marroquin, 1997). The immigrants among their ranks grew from 37.9 % to 39.1 % (Rochin & Marroquin, 1997).[2] Additionally, an estimated one million or so Mexicans live in metropolitan areas, where housing is available, but they work in traditional non-metropolitan industries, such as agriculture and food-processing plants (Rochin & Marroquin, 1997). Given the difficulty that the U.S. Census Bureau has in enumerating non-metropolitan populations and farmworkers, the numbers just mentioned may be significantly higher.

Since the 1980s, earlier in some cases, Latino immigrants—mainly from Mexico, Central America, and a number of Caribbean nations—have been embarking on journeys to rural destinations outside of the U.S. southwest. With each passing year, for example, many immigrants—entire families in many instances—are settling in Kentucky, Tennessee, Pennsylvania, North Carolina, Florida, and other states that had not experienced heavy Mexican immigration in the past.

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[1] Term "Latinos" refers to people whose origins are in Latin America. This population includes US citizens removed from Latin America over many generations, but who acknowledge and trace their rich heritage to Mexico, Central America, the Caribbean, and what is commonly referred to as South America.

[2] These percentages only include those Mexican-origin workers, between the ages of 16 to 64, employed in agriculture. Thus, it does not include immigrant children.

In these states and many others, the number of Latinos is increasing in towns and cities found in and around agricultural regions. In Pennsylvania, where my colleague, Laura González, and I (García & González, 1995; García, 1997) have conducted research, Mexican enclaves are emerging in Southern Chester County that until two decades ago did not attract Mexican immigrants or migrants. They are not always visible to the public, or show up in censuses, but their growing presence is evident. For example, Mexican women can be seen shopping in local grocery stores, and Mexican children sit in the classrooms of the schools. Further evidence are the Mexican delicatessens, video and tape shops specializing in Mexican movies and music, and tortilla factories that have opened up for business along the roads leading to and from these Mexican enclaves. In addition, Mexican food products, including imported goods, can be found in local grocery stores.

There are various reasons behind rural-bound Latino immigration, depending on the region and agricultural industry. In the Midwest, for example, they are drawn to farming opportunities and agricultural work, available in counties with an aging and declining farming population. In the northeast and south, the restructuring of agricultural industries and the intensification of crop production, sparked by the globalization of food production, are also luring Latino immigrants. Additionally, the SAW Program, designed to control the flow of undocumented, or illegal, labor into the country, is allowing family members of farm laborers, who adjusted their immigration status, to settle in these and other agricultural regions.[3]

Suggestions for the Preventing a Rural Latino Underclass

Now, I would like to redirect my talk to the key topic of my presentation—the prevention of a rural underclass among new Latino communities in non-metropolitan and agricultural regions. The Latino immigrants in Pennsylvania, mentioned earlier, and in many other areas outside of the southwest are homesteaders, comprised of parents and children. They are true pioneers in new lands who have a strong work ethic and desire to succeed economically in America. Unlike some second, third, and in some instances fourth-generation farmworkers in the southwest, they have not been beaten down. They still have hopes of making it and work towards their dreams. These immigrants are not part of the growing poor found in many crop-producing regions, such as the San Joaquin Valley of California. Some of the farm laborers in this valley have overcome what often appear as insurmountable obstacles to develop their communities. Despite the economic odds, they have managed to mortgage homes, open businesses, and add revenues to the tax coffers. However, others are not as fortunate. They earn low wages, supplement their incomes with public assistance, and do not have the resources to improve their plight.

Despite their hard work and aspirations for their children, Latino immigrants in Pennsylvania are beginning to exhibit signs of problems often associated with an underclass. Some of them are starting to draw on public aid and their children are not completing high school. The reasons behind the emergence and growth of a rural underclass—especially in agricultural areas in California—are currently being debated. In one camp, agricultural economists, such as Philip Martin and Edward Taylor (1997), argue that, to a certain extent,

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[3] The objective of Special Agricultural Workers (SAW) Program, a major legalization program of Immigration Reform and Control Act of 1986, was to legalize the undocumented labor force employed in agriculture. It allowed illegal, or undocumented farm workers, to legalize their status in the country, if they met stipulated criteria. These newly legalized workers were permitted to sponsor the immigration of their immediate family.

immigrants are responsible for their plight. They claim that the number of immigrants is too high in communities, and that the immigrants also lack the educational and occupational skills needed to succeed and, as such, fall back on pubic assistance programs. In another camp, anthropologists, such as Juan Vicente Palerm (1991; 1997; 1999), argue that not all of these immigrants are net drainers of resources. Some of them, he claims, mortgage homes, open businesses, and all of them through their work, remunerated at low wages with little benefits, have contributed to the prosperity of agricultural industries.

In these explanations, I argue, are possible solutions to preventing an underclass from spawning in newly created rural Latino communities. The answer is not in the creation of new social programs that in the past have kept people in poverty and, in the process, in the fringes of society. Instead, I believe that the key is in developing human and social capital already found in immigrant communities; if needed, using existing programs. It is also important to consider changes in the agricultural industry—changes that will enable farmworkers to earn a descent living that will help them develop the economies of their communities.

Let us take human capital for example. Anthropologists, such as Juan Vicente Palerm (1991) and Laura González (personal communication), have shown that an increasing number of recent immigrants are better educated and, in some cases, with professions, than their earlier counterparts. It is a major mistake to assume that all Latino immigrants, harvesting crops or cutting and packaging meat, are *campesinos* from the Mexican or Guatemalan countryside with little or no education. Given that they lack English language proficiency and licensing in the United States, dentists, accountants, and schoolteachers are working in agricultural fields, packing sheds, and meat processing plants.

I am sure that all of us agree that it is waste of valuable resources not to have these individuals practice their professions. Not only could they provide needed services to immigrants and non-immigrants alike in their new communities, they could also contribute to local economic development. These skilled individuals could serve as a basis for a Latino middle class that would add revenue to the region, instead of draining resources through prolong social service use. They need to be identified, and Universities and other institutions of higher education in their areas need to develop fast track, but comprehensive, curricula to improve their English and get them licensed in this country. The short-term costs of such programs will be significantly less than the long-term expenses of social service use that may run into generations in some families.

Staying with the subject of human capital, I would like to stress that efforts must be made to keep immigrant and second-generation Latino children in rural areas from dropping out of school. For immigrants and the poor, a sound education is the path to economic upward mobility. At 55 percent, Latino children in general have one of the highest attrition rates in this country. There are many reasons for this drop out problem, and all of them must be addressed in an orchestrated manner, especially the need to include parents in the education of their children. Immigrant parents must be socialized to the curricula of their children, the goals of local schools, and how they can be players in these processes. Again, here, there are benefits to the community as a whole. The short-term costs associated with the prevention of attrition are less than long-term ones associated with intervention.

In regards to social capital, it is a mistake to think that there is a dearth of it in Latino immigrant communities in rural America. It is there, and we need to learn how to recognize and use it. Juan Marinez, the coordinator of this panel and Farm Worker Coordinator of the Office of Outreach, USDA, and I are examining a social phenomenon that seldom gets much publicity

and research attention. In many rural areas across the nation, in and out of the U.S. southwest, immigrant and American-born Latinos are becoming crop producers. Existing data from the 1997 agricultural census indicate that there is nearly 28 thousand "Hispanic" operated farms, an increase of nearly 32 percent from the previous agricultural census (US Agricultural Census, 1999). Latinos outnumber other immigrant groups, such as Cambodians and Ethiopians, who are also entering farming in large numbers over the last two decades.

How these new entrepreneurs made the challenging and very difficult transition from farmworker to farmer needs to be examined, and models that will help others to do the same must be developed. Available anecdotal information suggests that hard work, mentorship relationships with ex-farm employers, sharecropping experience, and guidance and assistance from county and federal agricultural extension programs are important factors. Similar information indicates that immigrants tap onto existing social capital in their networks. They draw on the resources of kin and friends, and in doing so, obtain money, information, services, and other forms of assistance. In this area, as with the development of human and social capital, is an opportunity to improve the plight of immigrants and farmworkers—one that is not costly and with the potential of contributing to the growth of Latino businesses and to the employment of others.

Now, I will turn my attention to the most difficult and perhaps polemical of the areas that need to be explored in order to prevent the emergence of an underclass among Latinos in rural America. Growers and other crop producers must reconsider what agricultural economist Richard Mines and his colleague Rafael Alarcón (1999) in a major conference on hired agricultural labor characterize as an out dated "low wage system" that favors solo men over families. The two researchers argue that "What is needed is higher wages and longer employment, better working conditions, access to home ownerships, access to education and employment for spouses." The old system, they further argue, "cannot meet the needs of the workers and may have outlived its ability to meet the needs of the industry groups."

Anthropologist Juan Vicente Palerm (1991), mentioned earlier, makes a similar observation. He, too argues, that the agricultural industry, particularly crop producers, must create what he calls a locally-based "professional farm labor force" in order to improve the plight of farmworkers and their families and the poor economic conditions of their communities.

Mines and Alarcón are well aware that implementing these labor practices is a challenge, especially given the rising competition from food producers around the world. In fact, they point out that "many low-wage countries such as Argentina, Mexico, Brazil and China and high-wage countries such as Italy, France, Holland, Australia, and Israel" are in a position to out compete U.S. fruit, vegetable, and horticultural growers. However, they argue that the current system of low wage and high turnover agriculture will place these U.S. growers in economic peril in the future, if not altered. In its place, they suggest implementing an agricultural system "based on a settled labor force coupled with appropriate technology and labor management practices" that "would be compatible with a limited and controlled family-based immigration rather than a difficult-to control solo male migration". In short, they recommend mechanizing production tasks, which will lead to displacement in some work positions; paying higher wages to the remaining workers; and developing labor-sharing management schemes across crops and areas to ensure gainful employment. They propose that the displaced farm laborers be transition into other occupations and lines of work.

Conclusion

In conclusion, I would like to say that all indicators point toward an increase in Latino immigration to non-metropolitan and agricultural regions in the Untied States. We need to pay more attention to these newcomers, in particular we need to work together to prevent a rural underclass among them. These immigrants, as I have tried to stress this morning, are not lost cases, at least yet. They have a strong work ethic, aspire to improve their plight and better the opportunities of their children, and have a strong will to build stable families and communities. If their resource base is developed, particularly their human and social capital, and the current "high turnover, low wage system" in agricultural systems is replaced with one that favors families and children, these new immigrants will build economically viable communities. As is happening in southeastern Pennsylvania, they will open businesses with their savings; pay business, sales, and other taxes, contributing to municipal revenues; shop in local stores, keeping businesses afloat and open; and mortgage their homes and, in the process, revitalize neighborhoods. Thank you for listening.

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THE OUTLOOK FOR DAIRY

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Early 2000 news of the dairy industry has been dominated by discussion of low farm milk prices. However, the really remarkable aspect is not the low prices--but how difficult it was to bring them to this level. During 1998-99, milk production rose more than 4 percent. Yet, milk prices were records in 1998 and well above the decade's average last year. Only the output jumps of late 1999 were large enough to drop prices sharply. The race between expanding milk production and exceptional demand growth is not yet over, although milk production is the heavy favorite for 2000.

Dairy Demand Surges

During each of the last two years, real growth in the economy exceeded 4 percent as the current expansion approached record length. Disposable personal income also rose 4 percent in inflation-adjusted terms. With money in their pockets, their assets buoyed by a strong stock market, and confidence high, consumers were in the mood to spend. Real personal consumption expenditures rose about 5 percent in 1998 and in 1999. Expenditures for food shared the increase, rising almost 3 percent in 1998 and accelerating to almost 4 percent in 1999.

Consumer willingness to treat themselves boosted demand for cheese, butter, and milkfat for processed foods. Despite high prices in 1998 and 1999, commercial use of American cheese jumped almost 8 percent last year, following a 3-percent rise in 1998. Sales of other varieties rose 5 percent, after 2-percent growth in 1998. Meanwhile, commercial use of butter jumped almost 5 percent to the highest level since 1960. Sharply increased spending for away-from-home eating undoubtedly was an important factor, as was willingness to pay for the convenience of other forms of commercial food preparation. In addition, consumers probably simply did not let prices have much effect on food choices, particularly when entertaining.

Demand for those dairy products more dependent on retail sales generally was not as strong as for butter and cheese. Fluid milk sales grew only fractionally, while use of cottage cheese and most frozen products slipped. Even for these products, consumer indulgence was somewhat in evidence. Whole milk and reduced fat fluid products rose, while skim milk sales declined. Similarly, regular ice cream decreased less than did lower fat frozen products.

Not all was rosy for dairy demand, however. Use of separated skim solids in processed foods fell significantly, even though these products were in ample supply at stable and relatively low prices. Commercial disappearance of nonfat dry milk fell almost 6 percent in 1999, following a 3 percent decline in 1998. In part, the decrease reflected the ample supplies of raw milk and the reduced need to use powder to produce other dairy products. However, final use of nonfat dry milk has obviously slipped, as has the apparent use of wet forms of skim solids as ingredients. This weakness held growth in the total 1999 sales of skim solids to only half the 3-percent

increase in milkfat use.

Relatively strong growth in dairy demand is likely to continue in 2000. But, it may not match the boom of 1998-99. Economic activity and consumer incomes are expected to rise at a brisk rate, although possibly not quite matching last year. Some of the 1999 exuberance in food spending may be missing, particularly for dairy products. A part of the strength in 1998-99 demand probably was just making up for the somewhat sluggish 1996-97 reaction to economic expansion.

Weakness in use of skim solids in processed foods is a major uncertainty in the 2000 demand outlook, in part because information about these uses is relatively sparse. If such use recovers, or even just stabilizes, dairy demand would lose its only substantial weakness and the current period of low prices will be fairly short-lived. However, further erosion of this market could leave a surplus that would sap cheese prices and might require a long time to work off, even if economic growth continues.

Milk Production Also Surges

Milk production is in the middle of a substantial expansion precipitated by relatively high milk prices in 3 of the last 4 years, low concentrate feed prices, and ample supplies of alfalfa hay. Milk cow numbers are above a year earlier for the first time since 1986 and milk per cow is growing briskly. Milk production in 2000 will add another large increase to last year's rise of more than 3 percent.

Milk per cow rose more than 3 percent in 1999. Although the year-to-year growth was exaggerated by the relatively weak 1998 milk per cow, last year's was the first above-trend increase since 1994. A milk-feed price ratio averaging above 2.0 for the first time ever deserves much of the credit, reflected a huge incentive to provide cows with all the feed they can use. In addition, there were no serious weather problems directly lowering milk per cow in a significant way. Although supplies of prime alfalfa hay stayed tight, there was more available than during the preceding 2 years because of reduced export demand, and supplies of mediocre alfalfa were very large.

Large supplies of grains and oilseeds will keep concentrate feed prices relatively low in 2000, possibly the lowest in 13 years. The milk-feed price ratio is expected to stay modestly favorable to increased concentrate feeding and growth in milk per cow. Stocks of alfalfa hay probably are large, based on last year's heavy alfalfa production and the large total hay stocks. Milk per cow is projected to rise about 2 percent this year.

Lower returns will begin to weaken milk cow numbers--but how quickly and dramatically is very uncertain. Large numbers of producers have been hanging on but have not generated much family income, even during the last 2 years. Returns over concentrate costs are expected to fall about 10 to 20 percent in 2000 to levels similar to 1997. At these returns, exit of weaker producers likely will accelerate, possibly soon.

An extended period of low returns may be needed to slow farmer expansion. The unexpected 1998-99 returns gave the large, "new-style" dairy farms a sizable war chest for expansion. Tight

western alfalfa supplies and a scarcity of replacement heifers, factors that limited expansion during 1998 and 1999, either have or are expected to ease. Relatively large numbers of new or greatly enlarged operations have or will be coming into production in a number of regions. These farms will not be deterred by the expected returns and will be moving toward full production this year and next.

Average milk cows numbers may decline this year, but any decrease probably will be very small. Increased farm exit is expected to begin overcoming the effects of expanding producers by about midyear and restore year-to-year declines in milk cow numbers. However, the strong expansion momentum might keep cow numbers higher throughout 2000.

International Markets Quiet

Recent international dairy markets have had a rather tenuous stability. Prices have moved little even though dry milk markets appeared to be tightening, butter markets softening, and exchange rates changing significantly. Milk output is again growing substantially in Oceania but new sales are not being sought very aggressively. The European Union (EU) is in the middle of the normal end-of-quota-year supply uncertainty, but export supplies seem fairly limited because of large sales committed earlier and fairly good domestic use. International butter demand stays modest. Russia has been importing, but not in the amounts of a few years ago. Dry milk demand has been more active as the Asian economies have recovered and as several Latin American countries have been active.

International market prices are not expected to change dramatically this year unless weather cuts Oceanic production early in the 2000/01 season. EU export supplies are projected to be fairly steady, while U. S. Dairy Export Incentive Program (DEIP) exports will be smaller. Meanwhile, international demand is not expected to improve substantially. Dry milk prices might tend a little stronger, while butter prices stagnate. Even without much rise in international prices, the weaker domestic prices imply that U. S. imports beyond TRQ levels probably will be smaller in 2000.

Contracts under the DEIP will be fairly modest until the new allocations become available at midyear. Less than 10,000 tons of nonfat dry milk remains unfilled from the regular allocation, and the reallocated amount for April-June is only 6,300 tons. Most of the milkfat allocation remains, but others have been fairly well used up. Importing countries have been fairly aggressive about locking up DEIP contracts for dry milks since last summer, in part reflecting the tightening international markets and in part the smaller DEIP limits under WTO. If international market conditions continue as expected, dry milk contracts may again go fairly quickly once available.

Surging milk production and weakness in some uses generated a sizable surplus of skim solids throughout 1999 and early 2000. With opportunities for new DEIP contracts quite limited, sales of nonfat dry milk to the government under the dairy price support program have been relatively heavy since mid-December, about 10 million pounds per week. If sales of skim solids for ingredient use stabilizes as expected, this year's net removals may be slightly less than, or close to, 1999's 6.5 billion pounds, milk equivalent, skim solids basis. Last year's skim solids surplus was the largest since the eighties.

Tight milkfat markets in 1999 meant that net removals were tiny on a milkfat basis, with exporters unable to get supplies for much of the allowable DEIP exports of butter. In 2000, DEIP butter exports might be slightly higher, and price support purchases of cheese cannot be ruled out. However, net removals of milkfat are expected to stay quite small as milkfat markets are likely to stay fairly tight.

Prices Down Sharply

Current wholesale prices of butter and cheese are well below the levels of much of 1999, and heavy milk production threatens to keep them there for several months. However, prices are more unsettled than would normally be expected in light of the growth in milk output and the seasonally quiet markets typical of winter. Very large quantities of most dairy products continue to be sold. As long as demand remains so strong, even a very modest slackening of the production expansion could trigger substantial price increases. The possibility of a market situation similar to last year's is on the minds of traders, even if potential price swings probably are smaller. Price increases may begin well before the seasonal peak in output, or they may not come until almost autumn depending on when production rises start to ease. In any case, seasonal price rises are projected to be smaller than in recent years.

Farm milk prices in 1999 fell about $1 per cwt to $14.38. The 2000 decline is projected to be closer to $2 per cwt, leaving prices similar to those of the early nineties. Even very strong demand cannot easily absorb a 5-percent increase in output over 2 years.

Our view of the longer-term forces pushing the dairy industry have not changed much in recent years: slow growth in production and demand, a tendency to very gradual declines in real prices, and a domestic market that is relatively isolated from international markets. However, the baseline projections must take into account the adjustment pattern generated by the generally strong prices of 1996-99. Prolonged price strength leads to sustained growth in milk production, that leads to a period of low prices, that leads to corrections in production and prices.

Sometime during the next few years, lower returns will slow expansion by the stronger producers enough that it can no longer cover both the exit of weaker producers and demand growth. The timing of this event is very difficult to predict, in part because the data available is quite inadequate. However, we expect that at least 2 years of relatively low prices will be needed to slow growth in milk production.

Demand obviously also plays a role, under the current circumstances possibly more so than ever. If the recent phenomenal demand were to continue, the period of low prices could be significantly shortened. On the other hand, a recession (or even a period without significant growth) could significantly extend the low-price period. Since the economic expansion has already reached record length, a slowdown of some sort is a natural concern.

There is also a question of delayed demand response to the high prices of recent years. We are used to thinking of long-run price response as being similar to the short-run response. But, changes in the nature of dairy product demand may have accentuated lags in the demand response to high dairy prices. More than one-half of the sales of milkfat are to away-from-home eating places or to food processors--not directly to consumers through retail stores. For skim

solids, the share is only slightly less than one-half. Commercial buyers do not necessarily respond less to changes in wholesale dairy product prices, but they certainly resist quick changes. There is a real possibility that product reformulations and menu changes in response to the tight markets of recent years may still be in the future.

Food processors chasing consumer fads may be responsible for one key aspect of the current market situation. Use of skim solids, both dry and wet, in processed foods rose sharply during the first half of the nineties, before dropping again in recent years. Some of this increase was undoubtedly caused by the introduction of premium versions of staple products. However, the timing of the increases and the subsequent declines suggests that a major contributing factor was the fad for lowfat or nonfat foods. This is further supported by the prominence of baked goods and their ingredient products among the surge of new product introductions during this period. If the demise of lowfat foods has been a major source of the 1998-99 declines in skim solids demand, then this demand weakness may have about run its course, since last year's use probably was back to the levels of the early nineties.

U.S. Top Dairies: Benchmarks for Success

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The year 2000 will be a low milk price year for dairy producers. Barring a serious natural disaster such as widespread flooding or drought, we cannot expect the average level of prices at the farm to be much better than $1.75-$2.00 per hundredweight below the levels of 1999. For many dairy producers this is a sobering prospect. For others, the market correction has been well anticipated and, while it may dampen their short-term outlook, they will not take their eyes off of their long-term goals. 1997 was a similar year for producers and it was the year that a new initiative called the *U.S. Top Dairies Program* was launched.

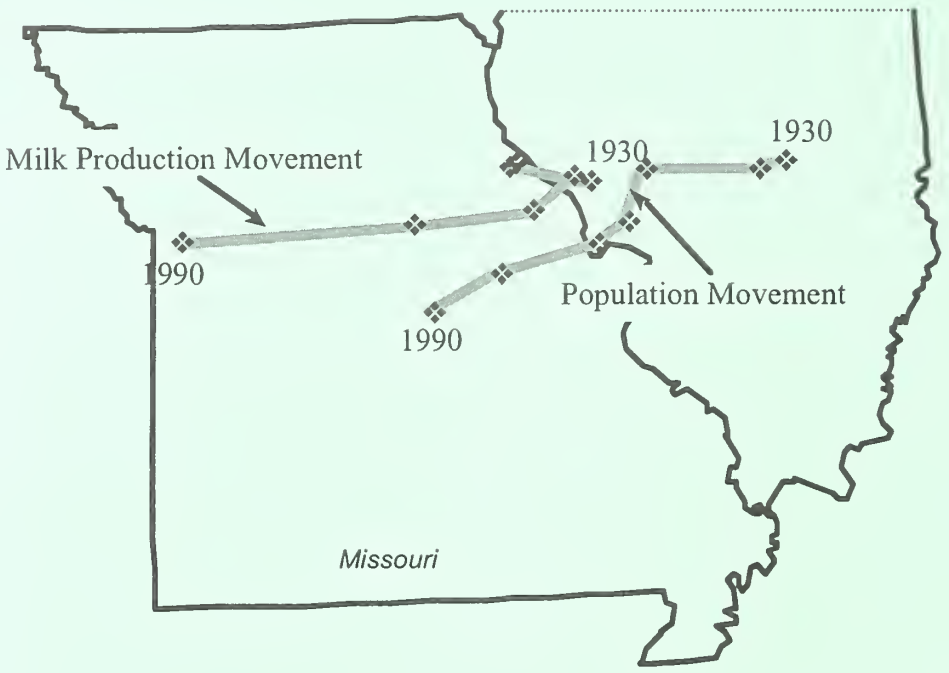
A handful of producers in the Northeast were asking questions about the lowest cost region of the country to locate a dairy farm. They had witnessed the tremendous growth of milk production in the western states and were wondering if Idaho or New Mexico was the dairy area of the future. They were further questioning whether they should relocate in one of the currently growing regions. It is useful to examine the reasons behind the growth in the western states as well as to look carefully at the actual returns from dairies across the country, before making such a critical decision.

The Growth of Western Milk Supplies

One hundred years ago, New York was the top milk producing state. Around 1914, Wisconsin surpassed New York and held the lead by a wide margin for the next eighty years. In 1994 California surpassed Wisconsin to become our number one milk producing state. There have been many reasons for the increase milk production in California, but one of the biggest has been a rapidly growing market.

A "centroid" is a geographically weighted average number. If you visualize the United States as a cut-out on a two dimensional surface with people stacked up as weights where they actually live, the centroid would be the balancing point of that plane. That point has been moving south and west for many years. The corresponding centroid of milk production has always been to the northwest of the population, but it has followed population in quite a parallel fashion—milk supplies have grown where there was a local population to demand dairy products. The figure below gives some idea of the relationship between the centroid movements.

A first lesson to be learned is that it is advantageous to be near your markets. A closer examination of the centroid movements does reveal that in the past two decades, the milk production centroid has outpaced the population movement to the west. There could be several plausible reasons for this: there are agronomic resources (climate and soils) better suited to milk production in the West, the momentum of historic production decisions has carried production past it's equilibrium, or that the efficiency of our food distribution system has reduced costs to the point that it really doesn't make much difference where products are produced. Perhaps there is a bit of truth in each of those possibilities.



The West certainly has excellent agronomic resources. California is an enormous garden and looks as though anything that is watered can be grown somewhere in the state. Alfalfa is no exception. The quality of that forage may be equaled, but it is not surpassed anywhere, and the irrigated yields are tremendous. That being said, I don't believe that the soils and climate are the overriding reasons for the phenomenal growth of milk production.

Historic production decisions have played a role in California's rise to the top. In the 1920-30s the 40 quart can was being widely embraced as a universal standard for shipping milk to the market. During that same time, the dairy industry in California was experimenting with bulk tanks. The new and larger dairy farms that were being built to supply the growing demand in San Francisco and Los Angles really could justify the single large expense of on-farm cooler technology. The 10-30 cow operations that were a standard in Wisconsin at the time could not. It would be another thirty years before herd sizes in other parts of the country were large enough to move up to a bulk tank. The bulk tank was a pivotal technology in the evolution of the dairy industry and its early adoption by western dairy farms helped to accelerate the growth in that region.

One hundred years ago, raw milk was being shipped by train as far as 400 miles into the metropolitan areas of the Northeast and butter and cheese was coming in from the Midwest. The technology of transportation and the distribution of finished products nowadays is truly amazing. A pound of cheese or butter can be sent from California to New York for as little as five cents. Local production is not as important as it once was leaving dairy producers free to consider exactly where the lowest cost of milk production might really be achieved.

Regional Costs of Production

Many Land Grant Universities have collected and summarized costs of production over the years. For example, Cornell University has had the *Dairy Farm Business Summary* (DFBS)project for more than forty years. These efforts have provided invaluable benchmarks for dairy producers to examine their own operations. As useful as the DFBS has been, it was inadequate to answer the questions that many of the producers in New York were asking. If it only cost 5-7 cents per pound to ship cheese from one end of the country to the other then theoretically, milk prices in California and New York might only differ by 50-70 cents per hundredweight (100 pounds of milk can be transformed into about 10 pounds of cheese). The potentially small difference in milk prices liberates producers from the observation that you need to be close to your market and it also makes you aware that your competition may not be limited to your New York neighbors.

The USDA's estimates of regional costs of production provide a starting point for assessing your competition. The surveys of milk producers used to compile these data are meant to be statistically valid and represent the general population in the region. Because of the ten-fold difference in average farm size between the northeast and western regions, a statistically valid comparison is not really a meaningful comparison of the achievable differences in costs of production. The returns to scale on dairy farms is substantial and we should be comparing "apples to apples". The New York DFBS in general represents larger-than-average farms and the dataset can be queried for farms in a particular size range. However, not every state has a DFBS program and the data that are available have been collected and reported in different ways. The only truly valid comparison would be a collection and summarization of original data.

The first *U.S. Top Dairies* program was an attempt to look at "best practice" farms in all of the major dairy regions of the country. Academics, dairy cooperatives, processors and regulatory agencies were asked to nominate "best practice" dairy operations in their region of the country. The selection was not necessarily to be the largest farms, but rather farms likely to be the low cost producers in each area. Those dairy producers were sent letters of invitation to complete a financial survey, modeled after the New York DFBS, and in August of 1997 the results would be shared among this group at a meeting in Orlando, Florida. Approximately 100 producers from all over the country accepted that invitation.

Tables at the end of paper summarize data that was collected. Because there were too few observations to make state-by-state comparisons, a geographic separation was made between "Eastern" and "Western" operations. Rather than being any strict definition of geography, the sample data presented themselves with no observations from a line running roughly from North Dakota to Louisiana. The financial performance summary is shown with five different methods of comparison. The "average" column is the simple average of all observations in the data. The "eastern" and "western" columns are the average of the farms in regions described above. And, the "Top 5" farms represent the average values of the five most profitable farms as determined by the highest rate of return on assets in the two geographic separations. These two regions of

the country make an interesting cleavage of the sample because of the predominance of different farming systems in each area.

Many interesting observations can be drawn from the summary. Although the farms represented covered quite a range in size, they were on average very large farms. The western farms averaged more than twice as many cows as the eastern operations but the eastern farms averaged more than six times the total crop acres. The two groups also had statistically different milk yields with the eastern farms averaging 22,588 and the western producers averaging 19,390 pounds per cow per year. Although the profile of income and expenses differed quite a bit between these two groups, the net farm income was almost identical with eastern farms averaging $218,936 and western farms averaging $206,928.

A perception of many people is that farms in the east have a much higher milk price while western farms enjoy lower costs of production. Both of these dogmas were challenged by the data. Eastern farms did have a higher milk price averaging $14.84 than the western farms at $14.06, but the difference was not as large as many people suspect. The notion of lower costs of production in the West was truly challenged. A buildup of the operating, or cash cost per hundredweight revealed that eastern farms spent $12.09 while the western farms spent $12.51 in that year. This meant that the margin, or net return over operating costs, was $1.55 for the western farms and $2.75 for the eastern farms. Smaller margins on the western farms, but coupled with their larger farm size yielded nearly identical net farm incomes.

Individual farm reports and the group summary provided the catalyst for discussion. A large portion of the day and a half program was spent in small groups with producers from different locations sharing ideas about the strengths and weaknesses of their own operations. If a farm noticed that their feed costs were particularly high, they would other participants how they managed to control their costs. This personal exchange of ideas and practices cannot be captured in a single report.

The Evolution of U.S. Top Dairies

The Orlando program was one of the most exciting gatherings of dairy producers that I have ever attended. In a low milk price year, these producers were tremendously enthused about the future of their industry. To a person, the written evaluations of the attendees indicated that we must hold this program again. They also had a few suggestions as to what could make a program like this even better—shorten the time between collection and reporting of farm summary results and involve more producers in the U.S. Top Dairies project.

Technology has made their requests possible. Annual farm data can be collected remotely using the internet and a farm summary is instantly generated. Moreover, all farms can participate and they can examine their businesses in ways that were never before possible. They can remotely query the database of financial submissions to generate benchmarks of their own design. For example, a farm may wish to look at operations of a similar size in their region of the country. They might wish to further constrain the request to Jersey herds with a substantial portion of forage consumption through grazing. If at least three records meet their request, a report is generated that compares their farm with the query of the database. Farms can also look at operations

with high rates of returns on assets and see what business practices are consistent with high profit levels. A thorough examination of your own operation's strengths and weaknesses is possible. Scatterplots with hundreds of combinations of variables can also be generated showing your farm relative to all others in the database. Users can be assured that this is a highly secured web site and that all individual information is held in strictest confidence. You cannot view individual data other than your own.

The *U.S. Top Dairies* program is a grass roots effort and is growing rapidly. Academics from different disciplines—Animal Science as well as Agricultural Economics—across the country are working with consultants and other industry representatives to encourage producers to become involved. It is not possible to know where you are going if you don't know where you are. A financial "benchmark" tells you exactly where you stand relative to your competition and can point you in the direction of your next step. For some, the next step may be relocation or a satellite expansion in a different part of the country. For others, it may be a move toward grazing or more simply the awareness of a need to trim costs out of a particular expense category such as concentrate purchases or machinery repairs.

The next workshop, *U.S. Top Dairies—2000,* will be held this summer. Participants from across the country will again be gathering to exchange ideas about best practices on dairy farms with an eye toward the bottom line. Individual producers may be unable to substantially alter the price that they receive for milk, but they are in control of their costs of production. Milk is profitably produced in all fifty of the United States. Understanding how the top dairies in each region have achieved high profits may help anyone become a more profitable producer. Please feel free to visit and use the U.S. Top Dairies web site located at http://cpdmp.cornell.edu and click on the "Benchmarks" button.

U.S. Top Dairies Financial Performance Summary

Table 1. Descriptive Statistics

Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Cows	980	1419	655	1214	629
Heifers	510	615	432	517	461
Percent custom raised	18 %	20 %	17 %	31 %	14 %
Milk sold per dairy	20,168,780	27,645,684	14,630,333	22,026,043	14,078,959
Milk sold per cow	21,228	19,390	22,588	19,628	22,567
Milk sold per worker	1,291,990	1,637,631	1,035,959	1,688,509	1,062,397
Cows per worker	63	86	46	89	46
Total crop acres per cow	0.99	0.24	1.55	0.00	1.59
Crop acres	608	151	946	2	1005
Acres owned	419	132	632	0	583
Acres rented	341	45	561	2	697

U.S. Top Dairies Financial Performance Summary

Table 2. Receipts, Expenses, Net Farm Income, and Return on Assets

Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Receipts					
Milk	$2,819,110	$3,932,417	$2,076,905	$3,321,184	$2,141,690
Dairy cattle	$106,016	$133,536	$87,669	$95,847	$51,855
Dairy calves	$21,543	$26,853	$18,003	$8,041	$8,924
Other livestock	$13,746	$27,055	$4,873	$27,315	$9,281
Crops	$35,892	$14,896	$49,888	$0	$28,684
Custom machine work	$3,221	$43	$5,339	$0	$2,161
Government receipts	$10,016	$4,526	$13,676	$0	$19,241
Other receipts	$48,392	$44,948	$50,687	$25,052	$194,568
Total receipts	$3,057,935	$4,184,274	$2,307,042	$3,477,439	$2,456,406
Expenses					
Hired labor	$365,814	$398,866	$343,779	$251,858	$353,974
Dairy grain & concentrate	$835,212	$1,262,251	$550,519	$1,096,738	$565,321
Dairy roughage	$289,990	$642,444	$55,021	$457,483	$11,020
Nondairy feed	$50,694	$50,687	$50,699	$0	$0
Machinery hire, rent & lease	$33,470	$30,865	$35,207	$15,848	$39,248
Machinery repairs	$75,917	$72,707	$78,058	$73,407	$89,372
Fuel, oil & grease	$32,251	$30,081	$33,698	$24,779	$29,217
Replacement livestock	$163,828	$317,496	$61,384	$83,542	$4,800
Milking supplies	$52,166	$75,467	$36,632	$58,723	$43,026
Breeding	$19,622	$24,924	$16,087	$17,390	$18,453
Veterinary & medicine	$60,200	$67,547	$55,301	$81,441	$57,565
Cattle rent & lease	$5,173	$3,364	$6,379	$2,400	$3,494
Custom boarding	$16,705	$17,801	$15,974	$23,712	$21,965
Other, bST & marketing	$110,627	$117,432	$106,090	$161,753	$117,281
Fertilizer & lime	$26,054	$8,661	$37,649	$0	$35,089
Seeds & plants	$14,043	$1,555	$22,369	$0	$27,341
Spray & other	$23,539	$14,247	$29,733	$0	$54,090
Land, bldg. & fence repair	$24,492	$14,783	$30,965	$16,490	$50,845
Real estate taxes	$17,886	$17,249	$18,311	$2,467	$22,085
Rent & lease	$60,699	$72,193	$53,036	$119,376	$69,804
Insurance	$25,329	$31,278	$21,363	$17,090	$23,440
Utilities	$50,302	$65,957	$39,866	$53,944	$37,779
Interest	$148,945	$196,355	$117,338	$163,367	$122,563
Miscellaneous	$82,795	$127,729	$52,839	$46,760	$44,600
Total Operating	$2,585,752	$3,661,938	$1,868,294	$2,768,567	$1,842,370
Expansion livestock	$73,434	$102,196	$54,259	$151,653	$19,484
Machinery & bldg. depreciation	$184,595	$213,159	$165,553	$73,409	$92,023
Net Farm Income	$214,154	$206,982	$218,936	$483,809	$502,529
Operator's and unpaid family	$113,372	$104,425	$119,337	$84,000	$134,000
Rate of Return on Assets	3.97	3.44	4.32	20.08	14.12

U.S. Top Dairies Financial Performance Summary

Table 3. Receipts & Expenses per Hundredweight

Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Milk	$14.52	$14.06	$14.84	$14.75	$15.19
Dairy cattle	$0.51	$0.42	$0.58	$0.43	$0.37
Dairy calves	$0.10	$0.09	$0.11	$0.05	$0.06
Other livestock	$0.05	$0.09	$0.03	$0.11	$0.06
Crops	$0.32	$0.09	$0.48	$0.00	$0.19
Custom machine work	$0.01	$0.00	$0.01	$0.00	$0.01
Government receipts	$0.08	$0.03	$0.11	$0.00	$0.14
Other receipts	$0.31	$0.18	$0.40	$0.14	$1.41
Total receipts	$15.90	$14.96	$16.55	$15.47	$17.43
Expenses					
Hired labor	$1.96	$1.37	$2.37	$1.15	$2.51
Dairy grain & concentrate	$4.41	$4.79	$4.14	$4.84	$4.04
Dairy roughage	$1.02	$1.98	$0.36	$1.88	$0.08
Nondairy feed	$0.15	$0.08	$0.20	$0.00	$0.00
Machinery hire, rent & lease	$0.20	$0.15	$0.24	$0.07	$0.26
Machinery repairs	$0.45	$0.30	$0.55	$0.30	$0.62
Fuel, oil & grease	$0.21	$0.13	$0.26	$0.12	$0.21
Replacement livestock	$0.56	$0.84	$0.36	$0.41	$0.04
Milking supplies	$0.26	$0.29	$0.25	$0.26	$0.29
Breeding	$0.10	$0.09	$0.10	$0.07	$0.12
Veterinary & medicine	$0.33	$0.24	$0.40	$0.34	$0.40
Cattle rent & lease	$0.03	$0.02	$0.04	$0.02	$0.02
Custom boarding	$0.11	$0.09	$0.11	$0.16	$0.17
Other, bST & marketing	$0.61	$0.36	$0.79	$0.68	$0.85
Fertilizer & lime	$0.22	$0.14	$0.28	$0.00	$0.25
Seeds & plants	$0.12	$0.02	$0.19	$0.00	$0.19
Spray & other	$0.18	$0.08	$0.26	$0.00	$0.37
Land, bldg. & fence repair	$0.17	$0.07	$0.25	$0.09	$0.35
Real estate taxes	$0.11	$0.05	$0.15	$0.01	$0.16
Rent & lease	$0.35	$0.25	$0.43	$0.48	$0.47
Insurance	$0.15	$0.11	$0.17	$0.08	$0.16
Utilities	$0.29	$0.26	$0.31	$0.23	$0.28
Interest	$0.74	$0.67	$0.80	$0.67	$0.81
Miscellaneous	$0.42	$0.43	$0.42	$0.22	$0.33
Total Operating	$13.16	$12.82	$13.40	$12.08	$12.99
Expansion livestock	$0.48	$0.60	$0.40	$0.63	$0.12
Machinery & bldg. depreciation	$1.16	$1.00	$1.27	$0.31	$0.67
Net farm income per cwt.	$1.10	$0.54	$1.48	$2.46	$3.65

U.S. Top Dairies Financial Performance Summary

Table 4. Receipts and Expenses per Cow

Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Milk	$3,091	$2,718	$3,349	$2,881	$3,430
Dairy cattle	$109	$80	$128	$80	$81
Dairy calves	$22	$17	$26	$11	$15
Other livestock	$12	$19	$7	$19	$14
Crops	$68	$17	$103	$0	$43
Custom machine work	$2	$0	$3	$0	$3
Government receipts	$16	$6	$23	$0	$29
Other receipts	$66	$40	$85	$28	$292
Total receipts	$3,387	$2,897	$3,724	$3,020	$3,906
Expenses					
Hired labor	$426	$271	$533	$226	$553
Dairy grain & concentrate	$930	$926	$933	$960	$913
Dairy roughage	$211	$394	$86	$345	$16
Nondairy feed	$32	$16	$43	$0	$0
Machinery hire, rent & lease	$44	$28	$54	$13	$58
Machinery repairs	$97	$59	$123	$56	$141
Fuel, oil & grease	$45	$24	$59	$23	$45
Replacement livestock	$114	$162	$81	$85	$10
Milking supplies	$56	$56	$56	$53	$66
Breeding	$20	$17	$22	$12	$28
Veterinary & medicine	$72	$47	$89	$65	$91
Cattle rent & lease	$6	$3	$8	$3	$4
Custom boarding	$24	$20	$26	$33	$40
Other, bST & marketing	$134	$71	$177	$130	$195
Fertilizer & lime	$45	$20	$62	$0	$54
Seeds & plants	$26	$3	$41	$0	$43
Spray & other	$40	$16	$56	$0	$83
Land, bldg. & fence repair	$39	$13	$56	$18	$80
Real estate taxes	$25	$11	$34	$2	$37
Rent & lease	$76	$49	$94	$89	$99
Insurance	$31	$22	$38	$16	$36
Utilities	$62	$51	$70	$43	$62
Interest	$159	$132	$178	$125	$183
Miscellaneous	$88	$76	$95	$41	$68
Total Operating	$2,801	$2,488	$3,017	$2,338	$2,904
Expansion livestock	$100	$116	$90	$130	$27
Machinery & bldg. depreciation	$243	$182	$285	$59	$148
Net farm income	$242	$112	$332	$493	$826

Table 5. Balance Sheet

Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Farm cash, checking & savings	$26,054	$25,907	$26,152	$9,701	$27,086
Accounts receivable	$186,557	$289,860	$117,689	$221,496	$116,960
Prepaid expenses	$70,637	$109,646	$44,631	$159,892	$24,201
Feed & supplies	$332,372	$353,990	$317,960	$262,537	$380,788
Total Current	$615,620	$779,402	$506,431	$653,626	$549,035
Intermediate Assets					
Dairy cows	$1,053,631	$1,511,663	$748,277	$1,227,906	$723,700
Heifers	$350,712	$500,226	$251,036	$276,042	$314,204
Bulls & other	$13,964	$27,355	$5,037	$9,220	$860
Machinery & equipment	$505,702	$401,226	$575,353	$340,205	$530,543
Farm Credit & other stock	$57,226	$65,625	$51,627	$58,781	$70,311
Total Intermediate	$1,981,235	$2,506,096	$1,631,329	$1,912,154	$1,639,618
Land & buildings	$1,802,557	$2,203,792	$1,535,068	$282,480	$1,301,771
Other assets	$175,991	$300,372	$93,069	$101,929	$17,656
Total Assets	$4,575,403	$5,789,662	$3,765,897	$2,950,188	$3,508,080
Current Debt					
Operating & short term	$468,458	$792,846	$252,199	$525,060	$77,950
Accounts payable	$113,405	$205,280	$52,155	$251,617	$38,580
Current portion of inter. & long d	$99,327	$129,467	$79,233	$221,270	$132,068
Total Current Debt	$681,189	$1,127,593	$383,587	$997,948	$248,597
Intermediate Debt	$811,062	$1,208,738	$545,945	$834,477	$820,798
Long Term Debt	$701,054	$538,406	$809,486	$0	$549,619
NPV of Leases	$23,067	$22,008	$23,773	$44,670	$34,206
Total Liabilities	$2,216,373	$2,896,745	$1,762,791	$1,877,094	$1,653,221
Net Worth	$2,359,030	$2,892,917	$2,003,106	$1,073,094	$1,854,859
Debt/Asset Ratio	46.49	48.77	44.98	60.06	44.28

U.S. Top Dairies Financial Performance Summary

Table 6. Cost and Returns per Hundredweight

Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Dairy grain & concentrate	$4.41	$4.79	$4.14	$4.84	$4.04
Dairy roughage	$1.02	$1.98	$0.36	$1.88	$0.08
Nondairy feed	$0.15	$0.08	$0.20	$0.00	$0.00
Crop expense	$0.53	$0.24	$0.72	$0.00	$0.81
Less Crop sales & govt. receipts	$0.39	$0.12	$0.58	$0.00	$0.33
Net Feed & Crop	$5.71	$6.98	$4.84	$6.72	$4.59
Hired labor	$1.96	$1.37	$2.37	$1.15	$2.51
Operator's and unpaid family lab	$0.88	$0.69	$1.02	$0.44	$0.98
Total labor	$2.84	$2.06	$3.39	$1.59	$3.49
Machine repairs, fuel & hire	$0.86	$0.58	$1.06	$0.49	$1.09
Custom work	$0.01	$0.00	$0.01	$0.00	$0.01
Net machinery expense	$0.85	$0.58	$1.04	$0.49	$1.07
Replacement livestock	$1.03	$1.44	$0.75	$1.04	$0.17
Less Cattle sales	$0.61	$0.50	$0.69	$0.48	$0.43
Net cattle purchases	$0.42	$0.93	$0.06	$0.56	($0.27)
Milk marketing & livestock expense	$1.44	$1.08	$1.68	$1.53	$1.86
Real estate repair, taxes & rent	$0.64	$0.37	$0.82	$0.58	$0.99
Depreciation machinery & real estate	$1.16	$1.00	$1.27	$0.31	$0.67
Interest paid	$0.74	$0.67	$0.80	$0.67	$0.81
Interest on equity	$1.23	$1.01	$1.39	$0.47	$1.17
Total interest	$1.98	$1.68	$2.19	$1.14	$1.98
Other operating & misc. expense	$0.86	$0.80	$0.90	$0.53	$0.76
Less Miscellaneous income	$0.36	$0.27	$0.43	$0.25	$1.46
Net misc. expense	$0.50	$0.53	$0.47	$0.28	($0.70)
Operating Cost	$12.26	$12.51	$12.09	$11.98	$10.87
Total Cost	$15.54	$15.21	$15.76	$13.20	$13.69
Net Return over Operating	$2.26	$1.55	$2.75	$2.76	$4.32

Table 7. Concerns for the Future

[1 = "High Concern" and 10 = "Not a Concern"]

Variable	Average	Western	Eastern	Western Top 5	Eastern Top 5
Milk Price Volatility	3.6	1.9	4.4	2.0	2.4
Feed Prices	3.6	1.8	4.5	1.0	3.6
Environmental Regulations	3.2	4.1	2.8	3.8	3.2
Neighbor Relations	4.4	6.2	3.5	6.8	2.8
Attracting Employees	4.2	5.5	3.6	7.0	3.4
Retaining Employees	4.1	4.4	3.9	4.0	4.0
Motivating Employees	3.8	3.8	3.8	3.8	4.0
Market Access	5.7	4.3	6.5	6.0	4.2
Federal Order Reform	4.9	5.1	4.8	7.3	4.0
Access to Local Input Suppliers	6.8	6.2	7.0	8.3	5.6
Intergenerational Transfer	5.3	5.9	5.1	4.0	5.2
Access to Debt Capital	6.2	5.5	6.5	6.0	5.0

Table 8. Rate Future of Dairying in Your Area

[Percent of Responses]

Rating	Average	Western	Eastern	Western Top 5	Eastern Top 5
EXCELLENT	26	16	32	20	40
GOOD	43	37	47	40	60
AVERAGE	15	21	12	40	0
FAIR	11	26	3	0	0
POOR	4	0	6	0	0

Table 9. Investment Over the Next Three Years

[Percent of Responses]

Rating	Average	Western	Eastern	Western Top 5	Eastern Top 5
HERD SIZE	69%	60%	74%	80%	80%
HOUSING	63%	35%	79%	60%	80%
MILKING	43%	40%	44%	60%	40%
MANURE HANDLING	57%	50%	62%	60%	60%
FEED STORAGE	69%	55%	76%	80%	60%
REPLACEMENTS	67%	70%	65%	80%	80%

Agricultural Outlook Forum 2000 Presented: Friday, February 25,2000

NEW MARKETS FOR BIO-BASED ENERGY AND INDUSTRIAL FEEDSTOCKS
Biodiesel – Will There Be Enough?

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Introduction:

Biodiesel is a term that covers a broad array of fuels and fuel additives derived from various feedstocks each having specific properties. Biodiesel is commonly defined as a methyl or ethyl ester derived from vegetable oils, animal fats or various waste fats and oils.

Raw vegetable oils and fats, while exhibiting some characteristics of petroleum oil, are generally unsuitable for use in modern diesel engines without either modification to the engine or the fat source. A process known as esterification modifies the fat source in the case of biodiesel. In esterification the fat source is reacted with an alcohol in the presence of a catalyst. The reaction breaks the fat tryglyceride into its various individual components and yields a crude glycerin byproduct.

The esterification reaction converts the raw fat source into a material that is highly compatible with modern diesel fuels and diesel engine technology. In Europe the fat source is primarily rapeseed oil while the US primary feedstock is soybean oil.

Market Penetration:

The question posed by USDA Outlook Conference Organizers, "Will there be enough?", can not be answered without the answer to another question. For what?

Nearly 75 percent of diesel fuel use is for on-road transpiration. Rail, marine and other off-road applications consume the transportation balance. Diesel fuel use in these applications dwarfs the current and future production capabilities of the vegetable oil and animal fat industry. Hence, petroleum based hydrocarbons will continue to be the workhorse for diesel engines as far as the eye can see.

Does that mean that there is no place for biodiesel? No. Keep in mind that ethanol, a fuel that has been in commercial production since the 1930's, now has a market penetration of just over one percent of the gasoline pool. That one- percent market penetration accounts for over 500 million bushels of corn – or about 5 percent of the crop. While a drop in the gasoline bucket, ethanol is an important contributor to the total demand for corn.

It will be a long time before biodiesel reaches the market penetration level of ethanol. However, there are niche markets where the unique properties of biodiesel have their place. These niches are beginning to open up and will continue to emerge due to factors I will discuss a little later.

First lets take a look at the current and potential raw material availability.

Raw Material Availability:

Soybean oil is the mother of all oils in the United States. Soy has about an 80 percent market share that has held steady for over 20 years. In addition, soybean acreage has recovered to levels not seen since 1980. Around 10 million acres of soybean were lost in the early 1980's due to depressed returns and the attractiveness of farm program crops such as wheat, feedgrains, cotton and rice. Provisions of the 1980

Farm Bill allowed farmers to grow their program crop base. Soybeans did not have a target price or deficiency payments at that time so farmers reacted to the government signals by switching to protected crops. The 1985 farm bill corrected the "race for base" signal but did not allow planting flexibility or subsidy neutral income and price supports. By 1990, "triple base" and 0/92 provisions began to encourage market-based planting decisions. Soybean planting began a slow rise as a result. The 1996 Freedom to Farm legislation decoupled income supports from planting decisions and unleashed pent up demand for soybean crop rotations. Today soybean acres and production are at historically high levels. Most analysts see some continued increase in soybean acres but then a leveling off as farmers reach an agronomic equilibrium.

Near Term Soybean Oil Availability:

For purposes of this paper I will assume a near term soybean crop of around 3 billion bushels, domestic crush of 1.8 billion bushels and oil yield of 11 pounds per bushel.

I will also assume that human food use will always prevail in the demand equation. This is logical from an economic perspective since there are few substitutes for food and many substitutes for energy and industrial feedstocks. As evidence one need only look to the market response of ethanol producers in 1995 when corn prices reached historically high prices. Ethanol plants, even with tax exemptions for their product, could not compete with feed markets when corn was rationed by price.

Soybean oil carryover has drifted between 1 and 2 billion pounds over the recent past. For assumption purposes I believe that biodiesel could only count on being able to pull 1 billion pounds from the available domestic carryover without raising short-term prices beyond those that would curtail the biodiesel industry. At a conversion rate of 7.7 pounds per gallon, about 130 million gallons could be produced from the expected soybean oil carryover. Other edible oils have been disregarded for this exercise. They account for around 2 billion pounds of total consumption and are from sources such as corn, cotton and sunflower Oils from these feedstocks are typically higher priced than soy and unlikely to be used for industrial purposes.

Assuming a total transportation diesel fuel use of over 40 billion gallons, 130 million gallons represents just three tenths of percent of total use. However, 1 billion pounds of soybean oil represents nearly 7 percent of total domestic soybean oil use of around 15 billion pounds.

Near Term Animal Fat and Waste Grease Availability:

Unlike soybean oil, animal fats and waste greases do not have a large supply carryover from which to draw. Animal fats and waste greases are rendered or processed for use primarily in the feed markets as a cheap sources of energy. They are consumed as they are made available. Supply is a byproduct of other activities such as animal slaughter and fast food preparation. Products clear the market at whatever prices it takes. Although not always true, the price of these fat sources generally rises and falls with the price of soybean oil.

The price discount between these feedstocks and soybean oil can vary from 25-75 percent. An apples to apples biodiesel price comparison using different feedstock assumptions is difficult without knowing the quality of soybean oil and the quality of alternative feedstock used as a beginning point in the conversion to biodiesel. Generally, conversion yields are lower and processing losses higher for lower quality feedstocks with higher free fatty acid contents.

It is estimated that total raw material availability from these sources is around 2 billion pounds. At the right price and assuming no technical barriers, a significant portion of these feedstocks could be bid away from their current feed uses toward energy and industrial feedstocks uses.

However, a significant demand increase from the fuel side will quickly drive non-soy feedstock prices up to the price of soybean oil. This result can be predicted due to the byproduct nature of the raw materials.

There is little domestic supply response as a result of a demand increase. At some price point users will either reduce usage and/or switch to soybean oil and vegetable oil byproducts as substitutes for the animal fat and waste grease materials.

For purposes of this paper, and without a complex computer model, I have assumed that biodiesel could pull .500 to 1.0 billion pounds of material from the non-soybean oil sectors. This converts to between 65 and 130 million gallons of biodiesel.

Total Current Domestic Availability:

130 million gallons from soybean oil
65-130 million gallons from alternative feedstocks
Total equals 195 to 260 million gallons or at maximum, six tenths of one percent of total diesel fuel use.

Esterification Capacity:

It is important to note that the above domestic availability does not consider the available esterification capacity. There are few reliable estimates of actual esterification capacity. The literature evidences 10-15 million gallons of dedicated biodiesel capacity. However, these numbers are dwarfed by the esterification capacity of the oleochemical industry. Esterification and transesterification are processes long used by the oleochemical industry as front-end processes in the manufacture of soap, detergents, cosmetics and other products. Again, few reliable estimates are available to document the surplus or swing capacity of the oleochemical industry to make biodiesel. One oleochemical company has claimed surplus domestic capacity of over 40 million gallons.

If demand were sufficient, this author believes that between 50 and 100 million gallons of capacity could be called on in the immediate or near future without significant construction of new plants.

Future Raw Material Availability:

Future raw material availability for biodiesel production is significant. Additional sources include expanded soybean acreage, higher oil soybeans, higher oil soybean substitute crops, and high oil substitute crops for non soybean areas, greater domestic crush of soybeans otherwise going to the export market and imports of foreign oils or their esters.

Expanded soybean acreage:

Soybeans could capture another 10 million acres due to global increases in demand for protein fed meat such as poultry and pork. These acres will primarily be drawn from small grains such as wheat where US comparative advantage is slim or nonexistent. If all the additional oil were available for fuel, the supply impact would be an additional 500 million gallons.

Higher oil soybeans:

If the soybean oil yield were to increase from 18 percent to 20 percent – a level already achievable – soy oil availability would increase by 10 percent. At an assumed future domestic crush of 1.8 billion bushels the additional oil would amount to 1 pound per bushel or 1.8 billion pounds or 230 million gallons.

Higher oil crops:

Sunflower and canola are crops with higher oil content than soybeans. Depending on yield assumptions either crop could produce 10 gallons per acre more oil than soybeans. Additional oil could come from switching out of soybeans to these oil crops or from switching out of other crops to sunflower or canola. Alternative oilseeds are climatically compatible with the northern tier and high plains states. These are primarily wheat and other small grains growing areas. Coincidentally, these are the areas with the highest

concentration of Conservation Reserve Programs (CRP) government idled ground. Ten to fifteen million acres could be freed up to plant oil crops simply through release of the government ground. A conservative 10 million-acre CRP release could yield 600 million gallons of biodiesel raw material without drawing acres from other crops.

Another 20 million acres could switch from lower value small export grains to higher value domestic oil crops. Switched acres would come from those currently used to supply the highly competitive and still distorted export markets for wheat and other small grains. These acres could yield another 1.2 billion gallons of raw material.

Expanded Domestic Soybean Crush:

About 1 billion bushels of soybeans can be exported assuming a crop of around 3 billion bushels and a domestic crush of 1.8 billion bushels. If the value of oil began to exceed the value of protein, crush would expand and additional oil would be available. Similarly, if protein were to lead the way, crush could expand and additional oil would be available. The bottom line is that roughly 11 billion pounds of oil leaves the United States in the form of raw soybeans. At the right oil or protein price levels crush will expand and additional oil will become available. The biodiesel raw material equivalent is 1.4 billion gallons.

Imports:

Lurking out beyond our shores are hundreds of millions of pounds of raw materials in the form of animal fats, waste greases, and raw fats from various sources. At the right price, our virtually open boarder policy will allow the entire planet to supply US demand for biodiesel. Obviously, for a domestic biodiesel producer the prospect of imports is not savory. However, reality is that commodities will find a home where their value is greatest when borders are open. Any significant run up in domestic prices will draw imported materials to meet the demand.

In this sense, imports provide a consumer supply safety net should spot shortages of domestic demand occur due to weather or other unforeseen circumstances.

Conclusions:

As you can see from the above, current and future raw material availability far exceeds current and future predicted demand based on the expected price uncompetitiveness of biodiesel versus diesel. Without significant tax exemptions or use requirements biodiesel must slug it out in the alternative fuel market or as a small component of diesel fuel formulations. I have estimated near term raw material availability at 195-230 million gallons or three tenths of one percent of transportation diesel fuel use.

My longer range estimates of availability from increased soybean oil acres, soybean oil content, idle acres, switched acres, increased domestic soybean crush amount to nearly 4 billion gallons

However, as I said at the outset, is a niche fuel or fuel additive and in this sense does not compete against diesel. In fact, neat or high blend (20 percent) biodiesel only makes sense in those markets where alternatives to diesel have been demanded by the government or consumers. In the non-alternative fuel markets, lubricity, health and environmental benefits of biodiesel may give it a place in the diesel fuel formulation.

Ag Processing Inc and our marketing subsidiary, Ag Environmental Products LLC see diesel and diesel technology as the only viable short term solution to increasing transportation efficiency. In their government sponsored effort to find the 80-mile per gallon car, auto manufactures have come up with the diesel/electric hybrid. A new idea? Not really, locomotives have used this concept for 40 years. The point is that if the United States were ever to get serious about fuel economy, the medium duty (yes that means pickups and SUV's) and the light duty fleet would need to be converted to diesel technology.

Ironically, in the rest of the world were fuel is not so cheap, diesel is a major force in the light and medium duty market.

While inherently more efficient and therefore more environmentally friendly, the US environmental structure is more hostile to diesel than in other countries. NOx and particulate matter emissions are a real challenge for diesel given the US EPA and California Air Resources Board (CARB) direction on air pollution. Over time however, we believe that biodiesel will have a role to play in helping diesel through a transition to becoming a cleaner and more environmentally friendly fuel. For example: ultra low sulfur fuel is being considered in California. The lubricity problems with low sulfur fuel could be a fit for biodiesel. On the health front, some components of diesel particulate matter have been identified as potential carcinogens. Recent EPA Tier I health effects testing show very positive results for biodiesel speciated particulate matter emissions.

In addition, if the talk about the need to reduce greenhouse gases ever turn into something real, biodiesel value will increase substantially due to the closed carbon loopnature of a renewable fuel source.

Back to the question. Will there be enough biodiesel? The "For what?" question can be answered with some already scripted or conceptual goals.

The Energy Policy Act set a goal of alternative fuel displacement of 10 by 2000 and 30 percent by 2010. We are nowhere close. However, under the right set of incentives or use requirements the supplies would be available to at least get to the 10 percent level by 2010.

Executive Order 13134 set goal to triple use of biobased products which could certainly be reached under the material availability scenario laid out above.

A proposal has been drafted by the Administration to require an 8 percent renewable energy portfolio as part of the energy deregulation policy. Again, with the proper incentives or standards the goal could also be met in the transportation sector.

A less ambitious, but probably more practical proposal has been floated on Capitol Hill to require a two percent renewable content standard for fuels over time. For diesel, assume a 40 billion gallon baseline, the renewable standard would require 80 million gallons of biodiesel. While these numbers seem small compared to the availability outlined above, it would in my mind be an achievable target that if phased in over time could be met by domestic sources without disruption to the agricultural or energy markets. It would require over 600 million pounds of raw material and a probably doubling of production capacity.

The University of Missouri-Columbia (FAPRI) has estimated that this level of increased demand would boost the value of the crop by $300 million annually (if all the demand was supplied by soybean oil). Last year Congress provided $475 million in extra assistance for soybean farmers due to low prices. Maybe now is the time to consider demand oriented policies rather than unpredictable and highly political emergency farm legislation.

Agricultural Outlook Forum For Release: Tuesday, February 25, 2000

THE OUTLOOK FOR LIVESTOCK AND POULTRY

Shayle D. Shagam
Agricultural Economist
World Agricultural Outlook Board, USDA

The U.S. livestock sector will begin to climb out of its dismal hole as the low prices of late 1998 and early 1999 result in red meat production declines in 2000 which will carry into much of 2001. Cattle and hog prices are expected to climb into 2001 as the stage is set for the next phase of the respective livestock cycles. Conversely, the poultry sector is expected to follow a different pattern. Responding to the strong returns in 1998 and 1999, broiler producers expanded in 1999 and into 2000. However, the increase in production coupled with weakness in some segments of the parts market resulted in price declines in 1999 which will carry into 2000 and 2001. Turkey production is expected to expand in 2000 and 2001 as producers respond to the strong positive returns generated in 1999. Prices are forecast to decline as production increases. Despite declines in beef and pork production, total red meat and poultry production in 2000 is likely to be fractionally above last year.

Beef Production to Fall on Herd Rebuilding

The liquidation of the U.S. cattle sector continues to generate large volumes of beef as a combination of near record heifer slaughter and dryness in much of the traditional winter grazing area moves large numbers of cattle into feedlots. Feedlot placements in 1999 averaged 9 percent over 1998; thus the number of cattle reported in feedlots nationwide on January 1 was 14.0 million head, the highest level since 1973. Heavy placements late last year and in the beginning of 2000 are likely to boost slaughter into the second quarter of 2000, but thereafter cattle slaughter will begin to diminish as much of the available supplies of feeder cattle have already been drawn forward. Placements during 2000 are expected to fall below year earlier levels as the supply of feeder cattle declines and cow-calf operators retain heifers for breeding. Quarterly cattle on feed data indicates that in 1999 heifers averaged about 40 percent of the cattle reported in feedlots in 7 states with more than 1000 head. This is the highest percentage since the survey began in 1992. As cow-calf producers respond to positive returns, increased numbers of heifers will likely be retained in 2000 for breeding to calve in 2001. This will likely dry up an important source of recent feedlot placements.

Beef production in 2000 is forecast to be 25.7 billion pounds, about 3 percent below 1999's record. As mentioned previously, production in the first quarter will likely be higher, driven by the large placements in the last quarter of 1999. Production is expected to decline through the remainder of the year with the greatest reductions in year-over-year production occurring in the fourth quarter. As the cattle cycle bottoms, beef production in 2001 could be 5 percent lower

before beginning to turn up the following year.

Cattle prices climbed sharply from first quarter lows in the last quarter of 1999 on tight Choice beef supplies and strong year-end demand for higher grading beef. Strong economic growth and optimism about the future fueled demand for beef and raised fourth quarter retail choice beef prices to the highest levels since 1993. Demand has remained firm through the first part of 2000 and as prospects for continued economic growth remain good, it is likely that tightening supplies will drive retail and live animal prices higher. Cattle prices in 2000 will average in the upper $60 per cwt range. Large expected slaughter in the first quarter of the year will hold Choice steer prices to $67-$69 per cwt but prices are expected to rise $1-2 per cwt in subsequent quarters. In the absence of stronger grain prices, the demand for feeder cattle should boost prices into the mid-$80 per cwt range increasing returns should be enough to encourage herd expansion. As production falls even further in 2001, increases in prices are likely.

The reduction in cow slaughter as inventories fall and herd rebuilding commences will likely provide opportunities for increased imports. New Zealand should be able to capitalize on U.S. demand, but both Canada and Australia have liquidated their herds and like the United States will be entering their herd rebuilding phases. Both Argentina and Uruguay reached their quotas in 1999 so no increase in fresh, chilled or frozen product can be expected. 1999 saw growth in cooked product imports from both Argentina and Brazil, a trend which may continue into 2000. Nonetheless, the majority of trade occurs in uncooked product; thus, after reaching just under 2.9 billion pounds in 1999, beef imports may increase only 4-5 percent in 2000.

Exports are expected to have been over 2.3 billion in 1999, on the strength of sales to Mexico and Asia and food aid shipments to Russia. Economic recovery in Asia is responsible increased for sales to Japan and Korea. Over the past several years, Japan's imports shifted towards lower-value cuts and recent price increases in U.S. cut prices have been partly offset by an appreciation of the Yen relative to the dollar. In the absence of further food-aid shipments to Russia and higher U.S. prices, it is likely that U.S. exports in 2000 will fall 2-3 percent.

Cutback Underway in Pork Sector

The traumatic price movements of late 1998 and early 1999 have led to a reduction in hog inventories in 1999. Pork production grew on a year over basis during the first half of 1999 due to large second half 1998 pig crops and reduced gilt retention but began to decline in the second half as fewer farrowings earlier in the 1999 resulted in fewer animals available for slaughter. However, based on the large slaughter early in 1999 and slightly higher carcass weights, annual production reached a record 19.3 billion pounds. Lower production, coupled with firm demand led to substantial price recovery in the last quarter of 1999 and the early part of 2000.

Based on producer data supplied in the December *Hogs and Pigs* report, it is likely that pork production in 2000 will decline 3-4 percent to 18.6 billion pounds. The pig crops reported in the report would imply production declines of about 2 percent in the first quarter and 3 percent in the second. The farrowing intentions reported for December-February and March-May would

suggest that production may decline 3 percent in the third quarter and 6 percent in the fourth. However, it must be noted that in the month prior to the survey was taken, hog prices were averaged $35 per cwt but since December 1 prices have averaged $39 per cwt, reaching $40-41 in early February. To farrow hogs in March-May, producers would have to breed their hogs between December and February and it is possible that the recent runup in prices, along with expectations of low grain prices might encourage producers to farrow more sows than they had originally reported in December. On the other hand, the financial condition of some producers may require a longer period of positive returns before they are willing or able to increase production. Under this scenario, pork production would likely continue to decline in 2001 as producers would begin holding back female stock to begin the next expansion phase of the hog cycle. The March Hogs and Pigs report will provide a further indication of producer plans in 2000.

Hog prices have rebounded as production declined and stocks were worked down. Product demand was strong in the fourth quarter of 1999 due to strong economic growth and demand for bellies by the HRI sector. Prices in that quarter averaged $36.40 per cwt, $8 higher than first quarter prices and over $14 higher than the fourth quarter of 1998. As long as the outlook for economic growth remains favorable and with tighter red meat supplies on the horizon, 2000 prices are forecast to average $39-41 per cwt, about $5 higher than the 1999 average. Prices are expected to climb to about $2 per cwt in the third quarter before dipping seasonally in the fourth.

Despite the loss of Russia as a commercial market, pork exports in 1999 are expected to have reached exceeded 1.2 billion pounds. Asia and Mexico were strong markets for U.S. pork and additional support came from the food-aid shipments to Russia. Economic recovery in Korea and the appreciation of the Yen increased exports to those markets but sales to Taiwan also increased sharply. Mexico is a growing market for U.S. pork and in light of economic growth will likely remain so. Exports in 2000 will likely decline to about 1.2 billion pounds as it is unlikely that Russia will be reemerging as a commercial market for U.S. pork. However, sales to Asia and Mexico are likely to continue to expand although the rate of growth may be limited by increased U.S. prices.

Imports grew in 1999 to approximately 827 million pounds as production in Canada and the EU encouraged increased sales. Canada continues to expand production and the U.S. is the predominant market for Canadian product. Canadian statistics on January 1 indicated that the breeding herd was 3 percent higher, pointing toward continued expansion. It is thus likely that imports will continue to flow heavily from Canada in 2000. The opening of Maple Leaf Foods new plant in western Canada is expected to encourage the movement of pork into the United States. However, to the extent that this plant and any planned expansions of other plants during the year increase the slaughter of Canadian hogs, the effect may be netted out by reduced live slaughter hog imports. Total pork imports for 2000 are forecast to be about 800 million pounds.

Broiler Production Continues to Expand

Despite broiler price declines in 1999, returns have remained strongly positive which has

encouraged further expansion of the industry. On the heels of very strong returns in 1998 and 1999, broiler producers increased production. Federally inspected production climbed 6.5 percent to 29.7 billion pounds, the most rapid of expansion since 1994. The most rapid growth was in the first 3 quarters, by the fourth quarter of 1999 production growth slowed, reflecting more modest returns.

Production in 2000 is likely to expand an additional 4-5 percent as returns will remain positive albeit less than 1999. The hatching egg flock on January 1 was reported to be fractionally smaller than the previous year but the rate of eggs per bird more than offset the decline so egg sets should increase. Based on weekly data, after a period of lower egg sets in the fourth quarter of 1999, broiler egg sets are increasing. Cumulative potential placements into the hatchery supply flock indicate that further expansion of the supply flock through the first half of this year is likely.

Although many of the parts prices so far this year have been below last year, leg quarters are receiving some support from their price competitiveness in a number of export markets. Broiler prices are forecast to decline as production grows, especially in the first half of the year but tightening red meat supplies should provide some support for prices in the second half. Wholesale broiler prices are forecast to average 55-59 cents per pound for the year.

Broiler exports in 1999 were slightly above 1998 at about 4.74 billion pounds as trade with Russia began to slowly recover and the low price of leg quarters encouraged sales in a number of markets. Although commercial sales to Russia has not come close to its pre-collapse levels, exports to Russia and to the Baltic states for sale in Russia have shown signs of recovery. Exports to the Baltics through November were more up 150 percent. Exports to Asia, most notably Hong Kong/China and Korea helped limit the decline in broiler exports. Exports in 2000 are forecast to increase 2-3 percent to about 4.8 billion pounds. Russia is expected to continue recovering slowly and with slightly weaker U.S. prices in 2000 exports will likely continue to flow to Asia.

Turkey Production to Increase

In response to negative returns in 1997 and 1998, turkey production declined in 1998 and during the first quarter of 1999. As production declined and stocks were worked off in 1998, turkey prices rose and with relatively cheaper feed prices the industry regained profitability. In response to positive returns, the turkey production expansion began to manifest itself in production increases in the second quarter of 1999 and carried through the entire year. Annually, production increased less than 1 percent to approximately 5.3 billion pounds. Prices increased almost 11 percent in 1999 which will likely encourage further expansion in 2000. Turkey production is forecast to increase about 2 percent in 2000, the strongest rate of increase since 1996.

Turkey prices are forecast to increase above year-earlier levels through the first half of 2000 as higher production is partially offset by lower stocks. Although prices will remain firm in the second half, they will not match the price increases of 1999. The average Eastern Region Hen

prices is forecast to average, 66-70 cents per pound in 2000.

Turkey exports to most traditional markets were weak in 1999. Exports were down about 17 percent from 1998 at 379 million pounds. Exports are forecast to increase in 2000 on the basis of increased sales to Asia and the potential for some recovery in Russia. In 2000, exports may reach 390 million pounds 5 percent above 1999.

Egg Returns Favor Further Production Increases

Egg returns were positive in 1999 which will likely spur further increases in production for 2000. Table egg production increased almost 4 percent in 1999 reaching just over 5.8 billion dozen. Hatching egg production increased as well, rising almost 4 percent to just under 1.1 billion dozen. As production increased, egg prices fell in 1999, with the sharpest drop occurring in the fourth quarter. Prices for the year averaged 65.6 cents per dozen.

For 2000 total egg production is forecast to rise 2-3 percent to slightly less than 7.1 billion dozen eggs. The greatest increase is likely to occur in hatching egg production. Increasing production will likely put further pressure on egg prices dropping them about 5 cent per dozen.

Communication Technologies

- Explosion of new technologies
- Telecommunications: the technology of the information age
  - *Broadcast*
  - *Internet*
  - *Wireless*
- Access any time, anywhere
- Interactive

Urban/Rural Digital Divide

- "Falling Through the Net"
- Urban/rural dichotomy
  - Access to new telecommunication technologies
  - Use of computers
  - Technical education and acquisition of skills
  - Access to employment in technology fields
- Increasing importance of E-commerce for rural communities

Access Minnesota Main Street

enhancing rural development through electronic commerce

About Main Street

Curriculum

Participants

The Access Minnesota Main Street project is coordinated by the University of Minnesota Extension Service.
For questions or comments, contact mainstreet@extension.umn.edu.

Project Description

- Introduces small rural business to e-commerce
- Allows them to "try it out" for 6 months at no cost
- Nearly 400 business have taken part in pilot project

Partners

University of Minnesota Extension Service

U.S. Dept. of Agriculture

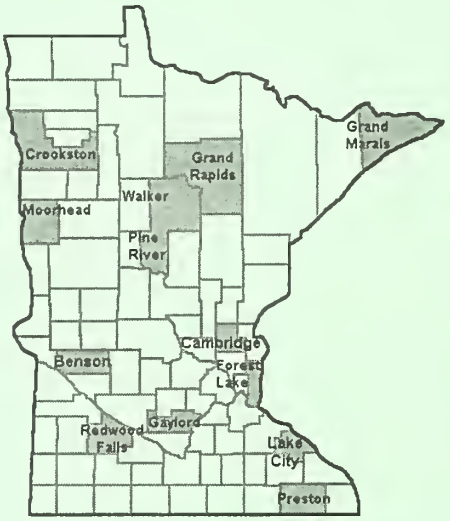
Onvoy

Local Internet Service Providers

Objectives

- Understand what e-commerce is
- Learn to use the internet as a tool to:
  - *Find new suppliers and markets*
  - *Research new product lines or services*
  - *Check out competition*
- Decide if a web presence is right for their business
- Learn the process of creating a web site
- Learn techniques to effectively promote a web site
- Learn how to incorporate e-commerce into a business plan

Main Street Sites



Format

- 16 hours of instruction
- 4 sessions
- Taught in computer lab
- 20 participants per workshop
- Instructor & several "helpers"
- Pool of instructors and helpers

Content

1. Electronic commerce basics
2. Finding business information and services online
3. Exploring e-commerce websites
4. Creating your website
5. Promoting your website
6. Developing your internet business plan

Types of Businesses

- Chambers of commerce
- Supermarkets
- Libraries
- Newspapers
- Lawn care services
- Manufacturers
- Auto dealerships
- Farms
- Resorts
- Computer services
- Art galleries
- Orchards

Success Stories

Darrin

Lawn Care Business

Wendy

Needlepoint Shop

Heather Chris

Hog Producers

Challenges

- Demand far exceeds current capacity
- Curriculum ages rapidly
- Heavy demand on staff
- Repackaging program for different audiences and using different delivery methods
- Assuring sustainability & securing additional funding

Successes

- Targets small rural businesses
- Encourages local business expansion
- Stimulates creation of new businesses
- Creates demand for improving telecommunication infrastructure
- Fosters business to business interaction

Next Steps

- Expand program beyond pilot phase
- Secure additional funding
- Explore new partnerships
- Develop alternative delivery schemes
- Develop process to collaborate with other state extension services

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Access Minnesota Main Street

Fall 1999 Summary

The Access Minnesota Main Street project teaches business owners in rural communities about the importance of electronic commerce for their businesses. Training is hands-on with comprehensive on-line curriculum designed especially for the program. Participants learn where to find resources and reach new markets. They prepare themselves and their business to compete in the worldwide electronic marketplace.

In the last year, the Access Minnesota Main Street electronic commerce course has been delivered in 13 communities in greater Minnesota: Grand Marais, Redwood Falls, Cambridge, Wabasha, Elgin, Lake City, Preston, Benson, Moorhead, Grand Rapids, Pine River, Walker and Oakdale.

250 people have participated in the course, representing businesses in the areas of tourism, agri-business, the arts community, retail, service industry, and manufacturing.

Many of the businesses have 1 or 2 employees. Some are startup businesses and businesses that are internet-only, without a physical store. Some are farm families looking for alternatives to traditional farming practices. Some are stay-at-home moms who manufacture craft items from their homes. Some are retired persons seeking new challenges and income. Some run bed and breakfasts or small resorts and know their livelihood depends on customers being able to find them.

Business owners that have participated in the course have appreciated:

- The "high touch" approach of the course helps overcome participant anxiety. Several instructors and facilitators are at each class to assist learners.
- The opportunity to meet and share information with other business owners in the community is exceedingly important
- The curriculum is presented in a common, non-technical language.

The online curriculum (**http://www.ecommerce.umn.edu**) draws over 2000 visitors each month. Project staff have had requests from all over North America from groups wanting to use the curriculum or wanting to receive training on how to deliver the program in their communities.

For more information about **Access Minnesota Main Street**, send e-mail to *mainstreet@extension.umn.edu* or contact the Project Directors: Bill Bomash at *wbomash@extension.umn.edu* (phone 612-625-8776) or Rae Montgomery at *rmontgomery@extension.umn.edu* (phone 612-624-2773)

UNIVERSITY OF MINNESOTA Extension SERVICE

USDA INITIATIVES

Glenda Humiston
Deputy Under Secretary, U.S. Department of Agriculture

Good afternoon, everyone. I am pleased to be a participant on this panel that is providing its perspectives on the outlook for local, state, federal, and private sector environmental initiatives affecting livestock production.

I am especially looking forward to listening to our other distinguished panelists and to the opportunity to address your specific questions during the closing question and answer period.

SIGNIFICANCE OF ANIMAL AGRICULTURE

USDA recognizes the important economic, environmental, and social issues centered on animal agriculture in the United States, and in other countries too.

The beef, dairy, pork, and poultry industries face significant challenges and we must all work together to achieve viable solutions that make both environmental and economic sense.

Animal agriculture produces more than $80 billion per year in farm-gate sales, making it an important part of both our Nation's economy and its food supply.

ENVIRONMENTAL IMPACTS OF ANIMAL AGRICULTURE

However, along with the many benefits that animal agriculture provides, it also produces huge amounts of by-products, such as manure, litter, and waste water. Animal agriculture has garnered much notoriety in this area. It is a significant land use in many watersheds. Public criticism has been triggered by outbreaks like *Pfiesteria* in the Chesapeake Bay area, *hypoxia* in the Gulf of Mexico, and offensive odors from animal feeding operations.

USDA's VOLUNTARY, LOCALLY-LED APPROACH

USDA is working with other federal agencies and local/state public entities, along with the private sector, to help the owners and operators of animal feeding operations to voluntarily address the environmental challenges they face. We need to support science-based solutions that work well for the unique needs of the livestock sector, and recognize the financial constraints that many livestock producers face.

USDA is a strong proponent of the voluntary, incentive-based approach as the principal means to help agricultural producers reduce the environmental impacts of agricultural production.

USDA's conservation programs work in partnership with locally-led processes and other local, state, federal, and private entities to deliver support for individual, group, and community efforts through

information, education, technical assistance, financial assistance, and innovative pilots and policy approaches.

For example, the Natural Resources Conservation Service's Conservation Technical Assistance and Environmental Quality Incentives Programs are two principal vehicles used by USDA to assist animal feeding operations in meeting environmental objectives in a voluntary manner, while maintaining production.

It is also important to note that USDA's conservation programs are used by many agricultural producers as the technical and financial assistance tools to help them comply with local, state, and federal regulations.

ADMINSTRATION'S CONSERVATION INITIATIVE

Because of the critical role that USDA's voluntary programs play in helping private landowners appropriately balance their environmental and production goals, and in some cases help them comply with other entities' regulations, I am extremely enthused about the Clinton Administration's $1.3 billion Conservation Initiative in the Fiscal Year 2001 budget.

The Administration's Conservation Initiative would greatly increase the amount of money spent on the conservation of private lands. It represents a bold, new way of looking at agricultural policy by rewarding farmers who want to aggressively develop and adopt new conservation measures.

The centerpiece of the Initiative is a new voluntary conservation program -- the Conservation Security Program (CSP) -- targeted to family farmers and ranchers who maintain or improve their natural resources. The CSP will build upon our existing conservation technical infrastructure and complement other USDA programs. Direct payments will be made to producers to financially recognize them for good land stewardship that produces environmental benefits.

The Administration's Conservation Initiative is strong evidence of the growing support for conservation on private lands. This growing support came through loud and clear during the conservation forums and the "Summit on Private Land Conservation" held late in 1999. We heard farmers, ranchers, executives of Fortune 500 companies, environmental experts, political people, and so many others tell us how we can deepen our commitments to the conservation of America's private lands.

CONSERVATION FORUMS AND SUMMIT

One of the suggestions we heard most at the forums and Summit was the need to make conservation policies and programs more flexible. In fact, flexibility and responsiveness to local issues were cited as necessary ingredients for the triumph of any conservation policy. Another ingredient cited was something that we at USDA know so much about and so deeply believe in -- the implementation of voluntary conservation measures. An approach overwhelmingly preferred by local stakeholders over regulation.

At the forums and Summit, there also was a cry for more technical assistance. One speaker said, "technical assistance is one of the things that there's always been very broad agreement on that the federal government does very well, does very appropriately, and does very cost efficiently."

UNIFIED NATIONAL STRATEGY FOR AFOs

Specifically toward achieving the goal of helping animal feeding operation owners and operators to manage their operations in a profitable and environmentally sound manner, USDA entered into the joint USDA/EPA Unified National Strategy for Animal Feeding Operations in March 1999. NRCS is a principal player being looked on by USDA to help implement this Strategy because of its technical standards and expertise, traditional ties to producers, ability to forge partnership approaches, and the agency's presence in nearly every county in the nation.

The Strategy has established a national performance expectation that all AFOs will have planned and be implementing Comprehensive Nutrient Management Plans (CNMPs) by 2009. This is a tremendous challenge -- one that will require major investments in research, technology development and transfer, training, technical assistance, and financial incentives to accomplish.

To support the implementation of the Strategy, USDA has been working hard to ensure that the environmental needs associated with animal feeding operations are a top conservation priority, by focusing the energy and identifying the resources needed to carry out:

- Effective information and education of AFO owners and operators.
- Research and technology transfer.
- Direct technical assistance.
- Cost-sharing assistance.

COMPREHENSIVE NUTRIENT MANAGEMENT PLANNING TECHNICAL GUIDANCE

Toward achieving the objective of getting the needed technical guidance in place to help public and private technical specialists assist AFO owners and operators with their development of CNMPs, NRCS released on December 9, 1999 the draft Technical Guidance for Developing Comprehensive Nutrient Management Plans. By releasing this draft technical guidance for a 90-day public comment period, we anticipate receiving constructive public input that will help us to release the best possible technical guidance in July of this year.

The technical guidance will provide a framework for helping animal feeding operation owners and operators to develop their site-specific, technically sound CNMPs. NRCS' technical references, processes, and procedures will fill in the framework.

A CNMP is a subset of a conservation plan. It is a grouping of conservation practices and management activities which, when combined into a system, will help to ensure that both production and natural resource conservation goals are achieved for animal feeding operations.

Given the magnitude and complexity of the CNMP workload, there is no question that the public and private sectors will need to collaborate closely, using the NRCS CNMP technical guidance and supporting technical references and tools, if we are to succeed in achieving the national expectation laid out in the Unified National Strategy for Animal Feeding Operations.

CONFIDENTIALITY OF INFORMATION

USDA intends to continue to protect the special relationship of trust that exists between farmers and USDA. In assisting AFO owners and operators with the development and implementation of their

CNMPs, the same "confidentiality of information" policy that USDA operates under now, will continue to apply.

USDA's ACTIONS TO HELP LIVESTOCK PRODUCERS

In summary, USDA is focusing significant resources and energy to help livestock producers voluntarily balance livestock production with environmental quality. More specifically, USDA is:

- Working to ensure that flexible, innovative, and credible technical tools and approaches are being prepared for CNMP development and implementation.
- Working to ensure that the knowledge, skills, and support are in place for NRCS and partner field staff to provide quality technical assistance.
- Working with the private sector to ensure that third-party vendors have access to training, technical information and tools, and certification processes.
- Developing a more integrated approach in USDA for addressing AFO needs, especially with USDA's principal research agencies -- the Agricultural Research Service and the Cooperative State Research Education and Extension Service.
- Working to build an outcome reporting capacity in order to quantify the economic, environmental, and other major benefits and effects from CNMP implementation.

The bottom line is that USDA is using every tool available to us -- from research to technical and financial assistance to education incentives -- to help livestock producers voluntarily meet environmental quality objectives.

CONSERVATION SUCCESS THROUGH PARTNERSHIPS

USDA provides a wide variety of assistance, both technical and financial, to landowners/users, communities, conservation districts, units of local and state government, and other federal agencies to help address conservation and resource protection challenges. USDA's conservation assistance is provided through local conservation districts and in partnership with state conservation agencies, an approach that has proven successful for over 65 years. At USDA, we rely heavily on this nationwide network of state and local partners to get cost-effective, science-based conservation on the ground.

Beyond the federal, state, and local government partnership, however, we also need more private sector initiatives and public/private partnerships, such as the On-Farm Environmental/Odor Assessment Review Project sponsored by America's Clean Water Foundation. Without question, animal agriculture industry-led initiatives, for example, can significantly increase the voluntary adoption of CNMPs to protect water quality.

The environmental and economic challenges faced by today's farmers and ranchers are too complex and too significant for us to do anything less than commit to strong public/private partnerships that benefit our natural resources, the private landowner, and the American public.